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NEWSLETTER

TRANSMISSION COMPANY OF NIGERIA (TCN)



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STEADY AND VISIBLE PROGRESS IN POWER TRANSMISSION

The Federal Government, through budgetary allocations as well as facilitation of multilateral finance agencies, has enabled TCN to complete and commission various projects and also construct several 330kV and 132kV transmission substations and Lines across the country

TCN ACHIEVEMENTS IN THE LAST TWO YEARS

TCN has commissioned several transmission substations and installed 45 power transformers across the country out of which 23 were installed in 2018 alone

Stabilized system frequency within 49.5-50.5Hz -next target is to achieve 49.8-50.2Hz

Initiated Transmission Rehabilitation and Expansion Program (TREP) and secured USD1.57b from multi-lateral financing agencies

Streamlined procurement process and improved qualification criteria to attract the best companies in the business

Decentralized project management function to regional offices

Audited TCN Annual Accounts from 2015 to 2017 and prepared financial statements of the company

Initiated the process for acquisition of functional SCADA

Initiated procurement of Automatic Meter reading (AMR) system

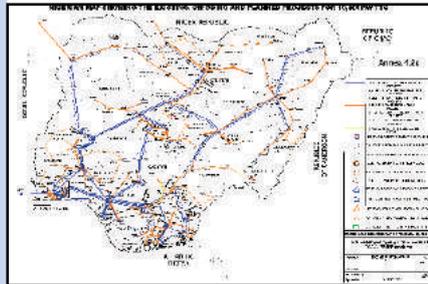
Completed 20-Year Transmission Expansion Master Plan

Increased in-house capacity for project implementation and engineering studies

Increased transmission wheeling capacity from 5,500MW to 8,100MW

Initiated competitive procurement of adequate Spinning Reserve

Cleared and evacuated 730 out of 810



Grid map showing existing, on-going and planned projects for 10,000TTC



Honourable Minister of Power, Works and Housing, Mr. Babatunde Raji Fashola, receiving 20 Years Least Cost Expansion Plan from MD/CEO



Cross section of participants at the TCN Conference on SCADA/EMS/Telecoms in Abuja

BENEFIT OF THE ACHIEVEMENT

The current Management of TCN with the support of the Federal Government led by President Muhammadu Buhari has in the last two years commissioned several transmission substations and over 45 power transformers. TCN's wheeling capacity has therefore risen from 5500MW in 2016 to 8,100MW as at December 2018 and rising. Power supply has comparatively improved tremendously nationwide.

Collaboration between TCN and Managements of power generating stations resulted in the activation of Free Governor Mechanism in power generating units which stabilized system frequency within 49.5 – 50.5Hz. Expected target is 49.8 – 50.2Hz which would facilitate synchronization with the power systems of WAPP member-countries for energy trading in the ECOWAS Sub-region.

Embarked on Transmission Rehabilitation and Expansion Program which is the strategy to rehabilitate and expand the nation's transmission infrastructure in line with international best practices through massive investments. TREP is expected to expand TCN wheeling capacity to 20,000MW by 2021.

Current Management has completed the audit of TCN's accounts for 2015, 2016 and 2017 which has put TCN in a creditable position to attract and obtain investments from multilateral agencies.

Delivered the 20-year Transmission Masterplan to guide future developments in all three major sectors of the power sector value chain – Generation, Transmission and Distribution. The Masterplan seeks to grow power supply in Nigeria to

stranded containers with project equipment from various sea ports in the country to project sites nationwide

Took over 7 transmission substations projects from non-performing contractors and completed them through in-house engineers



The new 132/33kV transmission substation at Ilashe, by TCN engineers

28,000MW by 2035.

Carried out a study on why several power projects were abandoned and discovered that several power equipment was stranded in containers at various ports. Through Federal Government's approval of some waivers and actual payments, management has been able to retrieve, clear and evacuate 730 units of 810 such stranded containers to their project sites for project completion.

Upgraded in-house engineering and technical ability which has resulted in TCN engineers completing several non-performing contracts that were cancelled. The projects were completed by in-house TCN engineers at below 15% of the initial contract sums.

Embarked on massive training of all staff on Computer Literacy and Engineering Development Program (EDP) for newly recruited engineers to enhance their skill sets to be more productive.

Initiated the procurement of adequate Spinning Reserve which ideally should be 10% of current generation level. Current spinning reserve is zero or forty (40MW). A properly administered power system should have 10% spinning reserve as buffer for emergency deployment, to support the grid in case of shut-ins from existing generators.

Initiated the process for the acquisition of functional Supervisory Control and Data Administration (SCADA) system for the grid which will enable system operators in the national control centers exchange operational information regarding the grid on real time basis with other operators in all substations in the country. This would also boost energy accountability, energy audit and transparency.

VISION

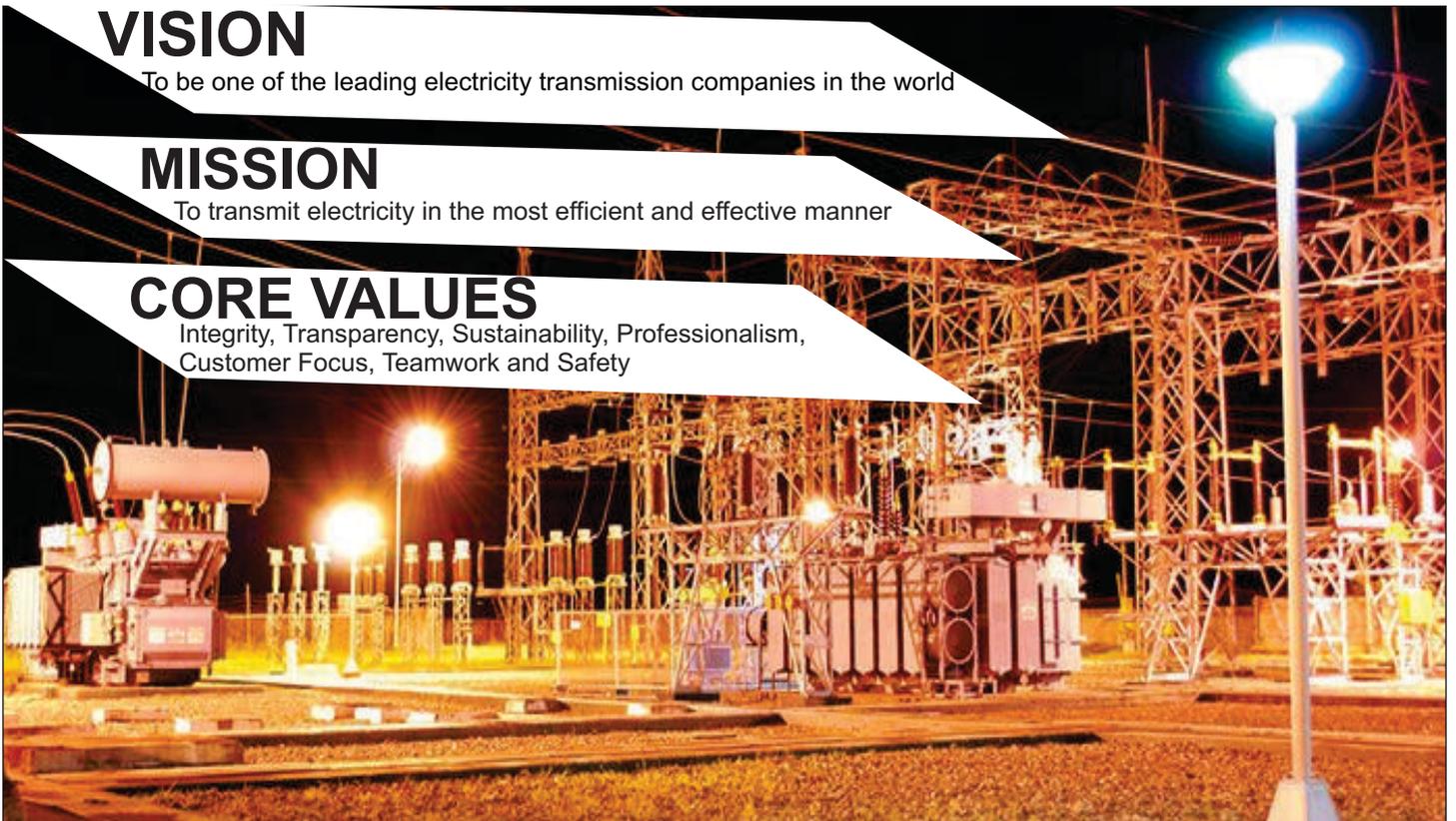
To be one of the leading electricity transmission companies in the world

MISSION

To transmit electricity in the most efficient and effective manner

CORE VALUES

Integrity, Transparency, Sustainability, Professionalism, Customer Focus, Teamwork and Safety





BUSSINESSDAY BESTOWS AWARD OF EXCELLENCE IN PUBLIC SERVICE ON TCN MD/CEO

By Timothy Oyebanji

In recognition of his outstanding performance in the power sector, the management of BusinessDay Media Limited, publishers of BusinessDay Newspapers bestowed Award of Excellence in Public Services to the Managing Director and Chief Executive Officer of Transmission Company of Nigeria (TCN), Mr. Usman Gur Mohammed.

Speaking before the presentation of the award to the recipients at the ceremony which took place on Thursday, January 31st 2019, at the Shehu Musa Ya'Adua Centre Abuja, the publisher and CEO of BusinessDay, Mr. Frank Aigbogun stated that the award was a way of recognising and appreciating sterling performance in public office.

According to him, since assumption of office as MD/CEO, TCN, Mr. Mohammed has been able to prove his worth that he is a seasoned administrator per excellence and an achiever.

He said “Business Day conceived the Public Service Awards to celebrate exceptional performances and commitments of those in positions of public responsibility who on day to day basis, translate the priority of the promises into the result and thereby are able to shape the life and the wellbeing of people of the Federal Republic of Nigeria.”

He noted that the selection of Mr. Mohammed for the award was meticulously carried out following strict criteria which included district

accomplishments in service to the nation.

Mr. U.G. Mohammed holds a B.Sc. degree in Accountancy from the Ahmadu Bello University, Zaria, an MSC in Business Administration (Management) from the Bayero University, Kano and a PHD from Nassarawa State University.

He is a Chartered Accountant and member of various professional bodies. Before his appointment as the MD/CEO of TCN, he had worked in various capacities in the defunct NEPA, PHCN, he was the Secretary of Revenue Cycle Management Project which was the first Public Private Partnership initiative in the then NEPA. He was also the Principal Power Utility Transformation Specialist in the African Development Bank (AfDB).



A group photograph of recipients of excellence in Public Service Award

SIGNIFICANT IMPROVEMENT IN FREQUENCY FLUCTUATION

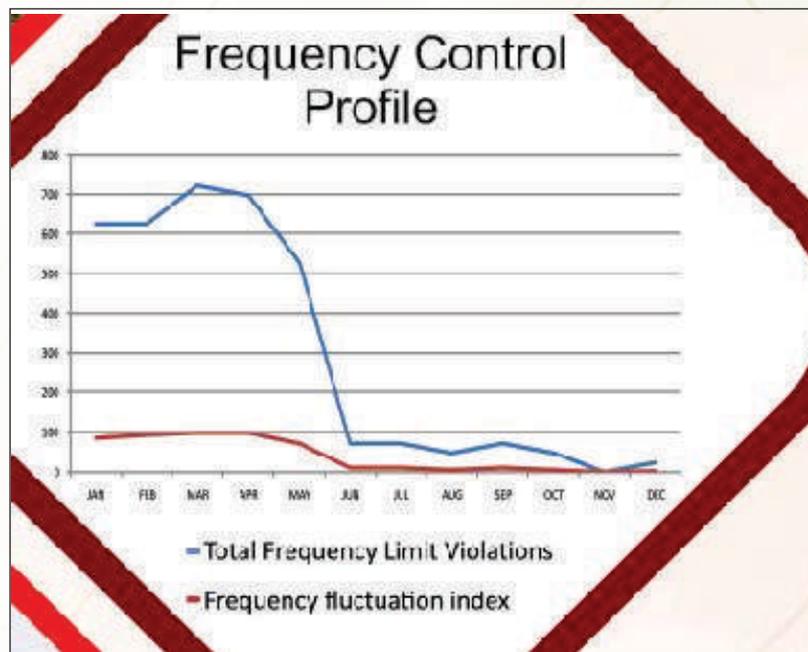
The National Grid has achieved frequency control of between 49.80Hz and 50.20Hz for 64.47% of the time and frequency control between 49.75Hz and 50.25Hz for 85.55% between December 27, 2018 and January 12, 2019. The frequency control is the best ever achieved in the history of Nigeria and is also the best in West Africa as at today. The frequency control achieved from January 8-12, 2019, is the best so far by any power utility in West Africa. The Management of TCN decided to further stabilize the frequency after the Workshop on frequency control organised by the West African Power Pool in Nigeria from December 17-19, 2018.

The Nigerian Grid Code Frequency Standard is 49.75Hz and 50.25Hz while the WAPP Frequency standard is 49.80Hz and 50.20Hz. Currently West African Power Pool operates three islands due to poor frequency control.

To ensure the entire region is synchronised into one, the Executive Board of WAPP obtained grant from the World Bank to support the effort. The Workshop which took place in Nigeria

recently, is one of the series of such Workshops supported by the World Bank. The World Bank grant will also procure some specialised equipment to be installed in various international interface points.

According to the MD/CEO TCN, Mr. Usman Gur Mohammed, a small taskforce was formed after the Workshop to drive the achievement of the synchronization effort. The team which comprise



three engineers, all Nigerians are pioneering the effort with the support of Generation Companies.

Nigeria has comparative advantage in power generation in West Africa. However, the advantage cannot be optimised fully until power from the entire sub-region is synchronised into one and necessary infrastructure constructed. In a related development, the Meeting of the Heads of States and Government of ECOWAS has approved the WAPP 2018 Transmission and Generation Master Plan. The WAPP 2018

Master Plan is expected to provide 330kV line from Nigeria to Senegal and will enable grid connection between WAPP and Central Africa Power Pool on the one hand and North Africa Power Pool on the other hand.

The WAPP 2018 Master Plan includes, the Eastern Transmission Backbone which will put in place 330kV Double Circuit transmission lines and substations from Calabar-Ikom-Ogoja-Kashimbila-Jalingo-Yola-Hong-Biu-Damaturu-Potiskum-Azare-Dutse and terminate in Jogana (Kano). As part of WAPP priority, the Eastern backbone will attract more concessionary funding from multinational resources of donor agencies. The Median Transmission Backbone which comprise 330kV DC line from Shiroro-Zungeru-

Kainji-Parakuo to Northern Ghana and finally end in Cote D'ivoire is also part of the approved master plan.

The frequency control collectively achieved with the active support of generation companies need to be sustained as it will assist significantly in further stabilizing the Grid to meet the need of electricity customers in Nigeria. As the frequency becomes more stable, more electricity customers who are hitherto outside will seek to be connected.



NNPC TO ESTABLISH INTEGRATED POWER PLANTS IN THE COUNTRY

By Eric Ene Ephraim

In a renewed hope and interest in the nation's power sector, the Management of Nigerian National Petroleum Corporation (NNPC) has disclosed plans to establish integrated power plants in conjunction with its Joint Venture partners to boost electricity supply in the country.

The Managing Director, Gas and Power Investment Company (GPIC), a subsidiary of NNPC, Engr. Hussain El-Yakubu made this known in a meeting with the Permanent Secretary (Power), Federal Ministry of Power, Works and Housing, Mr. Louis Edozien and the Management of Transmission Company of Nigeria (TCN), recently in Abuja.

El-Yakubu stated that the power plants which are part of the NNPC's Downstream Project of AKK gas pipeline, will be in Abuja, Kaduna and Kano. The generating stations would be sited close to transmission substations for easy evacuation of electricity when the plants eventually become operational.

According to him, 1,350MW power plants made up of three (3) blocks of 450MW each, will be sited in Gwagwalada Area Council of Abuja, Federal Capital Territory (FCT). The station would be less than one kilometer to the Gwagwalada NIPP Transmission Substation. In Kaduna, a 900 MW capacity power generating station will be sited close to Mando Transmission Substation, and another 1,350MW capacity plant with three blocks of 450MW each, will be sited at Tiga, close to the dam in Kano State.

In his remarks, Permanent Secretary (Power), Federal Ministry of Power, Works and Housing, Mr. Louis Edozien, commended NNPC for the ambition and scope of this initiative. He acknowledged that for the power plant to succeed, the gas to power side has to work.

On his part, the Managing Director and Chief Executive Officer of TCN, Mr. Usman Gur Mohammed, said there was need to work with NNPC in order to further stabilize the grid as most parts of northern Nigeria with big load centres are far away from generation stations, the closest being Shiroro Hydro Power Station in Niger State.

He noted that the purpose of the meeting was to extract commitment from NNPC on the deadline for the completion of the AKK (Ajaokuta to Kaduna to Kano) projects, as the project was fundamental to TCN's plan on competitive procurement of power to be injected from Kano for the North Core Project. He also said TCN wants NNPC to facilitate gas supply to other interested off-takers in Kano and Kaduna with a guarantee and sought to know if GPIC is willing to participate in the competitive procurement of Power for the North Core Project.

According to Engr. El-Yakubu, the Gas and Power Investment Company Limited (GPIC) was set up basically to focus on how it can create value and monetize the nation's abundant gas resources. The company will also focus on developing more power stations, fertilizer plants as well as petrochemical plants across the country. The project, he stated, would generate more job opportunities for Nigerians.



(Standing), MD/CEO TCN, Mr. Usman Gur Mohammed, during his presentation

Interview with the MD/CEO TCN, Mr. Usman Gur Mohammed

Interviewer: Can we describe the power sector as stagnant?

MD/CEO: I don't agree with your statement that the power sector is stagnant, because it has never been stagnant as several changes are on-going. We have moved from public monopoly to a liberalized sector. The distribution and generation companies have been privatised and the sector has reached a time where the private sector generates electricity and connects to the grid. We equally have open access where we all connect to the grid.

Interviewer: From the point of view of the consumers, is it stagnant?

MD/CEO: Even from the consumer's point of view, I do not think it is stagnant. When the government came in, the substantial increase in capacity was not more than 3500MW, we recorded the highest peak where you have the combined effort of the generation, transmission and distribution of 5224MW. Through this government the first highest peak was recorded in February 2016 and another higher peak on December 2017 and the recent new peak of 5,375MW in February 2019. The 7000MW referred to the capacity of transmission and generation, but even that has changed, as the capacity of generation now is 7,450MW, while that of transmission is 8,100MW.

Interviewer: It appears that consumers are paying for the poor relationship and lack of coordination between electricity generating companies and TCN on one hand, and between TCN and distributing companies, are you capable of transmitting all generated electricity?

MD/CEO: Of course, we are capable of transmitting all the generated electricity, but the problem is that power sector is a connected relationship where each party has to perform optimally, otherwise the other parties and everyone suffers. Just like I said, if you have a generator that generates 20kV and the load inside your house is 5kV, it will only generate the 5kV not 20kV. Our capacity is 8,100MW, generation is 7,425MW and distribution is between 4,000MW to 5,000MW. With this, transmission

and generation cannot be optimized.

Interviewer: You said transmission capacity would reach 20,000MW in 2021. What use is this, if they cannot be distributed?

MD/CEO: You have to understand that in the whole sector, the one that is difficult to fix is transmission. Fixing distribution is very easy, why because the RoW for distribution line is 5meters at each side, while the RoW of transmission for 330kV line is 25meters on each side and for 132kV it's 15meters on both sides. With this, it is very difficult to reach consensus with people who are owners of properties, more so those who have improvement on their land across the country. Also, it is easier to build a generation plant in a period of one year. But for transmission, for you to build a line, you have to do the Right of Way (RoW) survey and pay compensation. If we should wait until the distribution is fixed before we fix transmission, it would not make sense. For your information, investors are now coming to Nigeria because they see that transmission is being fixed.

Interviewer: In the four years Manitoba managed TCN, they had a competing local management team, was MHI frustrated out of the country?

MD/CEO: I do not think so. When I came, I met with and worked with those people that were said to have frustrated Manitoba, I worked with the same team from February to August 2017 and it is with them we achieved Frequency Control of 49.5 and 50.5 Hz, established Transmission Rehabilitation and Expansion Program (TREP) which we are implementing now and started in-house transformers installation.

Interviewer: Sir, over 700 billion naira was provided for electricity in generating companies. Now, is it fair for the government to subsidize privately owned companies and is it sustainable?

MD/CEO: Of course, it is not sustainable in the long



MD/CEO TCN, Mr. Usman Gur Mohammed

run, but when you say government is subsidising privately owned companies, of course, any money that enters a utility, someone has to pay for it. That is why even from the WAPP perspective, we took a decision in our last board meeting to the committee of the Heads of States that Government should provide revenue requirement of all their utilities. Which means they should give tariff that is cost reflective to all their utilities in West Africa. Where the Government cannot agree to provide the revenue requirement of all the utilities, then government should budget for the short fall by providing any form of support to make the utility work.

Interviewer: Would you say it was a mistake to privatize the generation and distribution companies?

MD/CEO: No, it is not a mistake.

Interviewer: Why?

MD/CEO: Particularly on the DisCos, we do the right things wrongly. We implement correct things wrongly, that's what I will just say, and as for the generators, it is working. Before the private sector took Kanji, how many of the units were working? now if you go there you will discover that we even have excess capacity there. In Egbin, how many units were working there when the private sector took over, also in Delta? So many of them have put in so much money and they have rehabilitated so many of those units and that is why we have excess generation now. That is also why I agree with the decisions of this government not to tamper with the privatization because, if the government cancels the privatization two things will happen. Firstly, government will have to pay contingent liability, which is a lot of money.

Secondly, they would have sent a wrong signal to the market that it is against the private sector. For your information, there is no way we can have a sustainable power or energy sector without private sector participation. Before the coming of this government, transmission was the weakest link, but now we are not, because this administration has taken a good look into the quality of power and that's why the Free Governor Control Mechanism was enforced in May 2017. We also enforced the NERC standard which is 49.75 and 50.25hrz. We have also done competitive procurement for spinning reserve, evaluated it and sent to NERC for approval.

Interviewer: TCN is the only successor company of PHCN that has not been privatised, would you want to

see it go down that road?

MD/CEO: There was a good reason why the government did not privatise at that time, but let me take you to models, which model did we adopt in the privatisation process? The Indian Grid, even with the achievement and development of India, Indian Grid is still owned by government and the grid has a capacity of at least 320GW. What of ESKOM in South- Africa, its owned by the government, even the grid of Egypt, Grid-Co of Ghana and that of Cote'd Ivoire, are all owned by the government. This means that the grid can be managed properly by the public sector, and can also be managed by the private sector, if you look at the American grid, it's managed by the private sector, so it's either way as long as it's working. Our biggest challenge in building

transmission infrastructure is the Right of Way (RoW). I can tell you it would be difficult for the private sector to deal with this problem because as government paying for RoW's is non-profit oriented, but if it's a private sector with profit motive, how would it work? I don't think it's the right thing to do, because I don't see any private sector that can afford the RoW for transmission infrastructures.

Interviewer: TCN has been spending billions of dollars, to rehabilitate and expand infrastructure, is the company investing in wrong places, where DisCos have no interest and are not particularly profitable?

MD/CEO: I don't think DisCos have no interest, if they have no interest, they would not go into the business. They have interest, that is why we are expanding. Let me explain to you, the Transmission, Rehabilitation Expansion Programme (TREP) is based on a study carried out by Fitchner GmbH & Co of Germany, called 20 Year Least Cost Transmission Plan, which is one of our achievements in the power sector. This shows that we are expanding based on a study and need. The need was established by that study, remember we are a bulk transmitter of electricity, we are not distributors of energy. We bring the energy, while the DisCos distribute the energy.

Interviewer: Based on whose need? The consumer, the DisCo or TCN?

MD/CEO: it's based on demand. There is what we call load demand study, for example companies like NNPC and CBN are not connected to the grid, but we believe that when we improve the capacity of power, they would come to the grid. So the expansion of the grid is based on the load requirement, whether its connected to the grid or



not, because we believe once the grid is stabilized, there is no way one can get cheaper power than what's on the grid and that's why we are expanding to put the necessary redundancy.

Interviewer: In spite of the policies and intervention from CBN, many consumers still do not have meters, is the National Assembly right to push for the cancellation of estimated billing?

MD/CEO: I don't know whether that would work. But if you look at what NERC has done, I think that has also made what the National Assembly want to do unnecessary because if you make that kind of law that estimated billing should stop, a lot of court cases would be created which would be difficult to manage. To me metering business is something that can be franchised, especially since DisCos don't have the drive and motivation nor the money. What NERC did was to licence Meter Asset Providers (MAP). So I can tell you very soon, you would see meters all over the place.

Interviewer: TCN has been complaining about the quality of meters that has been installed, hasn't it?

MD/CEO: No! It's not our job to manage meters its NEMSA and the regulator NERC. TCN cannot complain that the meters in that place are wrong meters. What affects us is that some of these places are not metered, DisCos give them short supply, so we constrain our generation, so we would have a lot of capacity in TCN and that capacity is not taken. These are the only things that concern us.

Interviewer: Can we assume that the only reason things have gotten this far is because the Regulatory Commission is not protecting the interest of consumers?

MD/CEO: I don't think so, if the Regulatory Commission is not interested in the right of the consumers why did they come with Meter Asset Provider? The only thing is that regulation requires certain levels of consultation for anything you want to come up with. If you don't follow the consultation procedure and you declare anything, somebody can go to court and render whatever you have done useless. If you remember the tariff for December 2015, it was challenged by someone and on the basis of lack of consultation, they got judgement. NERC does extensive consultations to ensure that there's is no mistake.

Interviewer: Rural Electrification was central to government development plans but today, with private companies setting the agenda, is profit the only criteria in deciding who gets electricity?

MD/CEO: No! Rural Electrification is supposed to be funded in certain ways, unfortunately that funding can only take place when the power sector becomes

sustainable. The Rural Electrification fund which depends on the Rural Electrification Strategy was approved by the President. The funding can only come when the market is sustainable also the Consumer Assistance Fund is catered for by urban areas. The Rural Electrification Fund takes care of people in rural areas, while the Consumer Assistant Funds takes care of poor people in urban areas. With all this, the market can pay itself, meaning all the players can get their revenue from the market.

Interviewer: Generating, Transmission and Distribution companies all complain about tariff, yet Nigeria pays one of the highest in the world for electricity. Do you think that tariff should be revised downwards?

MD/CEO: How did you come up with the conclusion that Nigerians are the ones that pay the highest tariff in the world? , I'm sure this is imaginative thinking. I am the Chairman of West African Power Pool (WAPP) and I can tell you that Liberia, Sierra Leone and other countries buy energy between 20 and 25 cents per kilowatt hour, so how can you say our own is more expensive. The highest and most expensive generation here is AZURA and it's about 9 and 10 cents per kilowatt hour. If you look at our average generation, the hydro is around 4 to 5 cents, AGIP and SHELL are about 5 cents. On average, we are not buying power more than 6cents Kilowatt per hour. Nigeria does not have the most expensive energy in the world. The market is driven by competition; comparing it to MTN, when they started their prices were high and when investment came in, it crashed the price and it became very sustainable. Same goes for the power sector, that's where cost reflective tariff and performance based contracts come in.

Interviewer: Sometime in 2017 you sent a request for increase in tariffs to the Nigerian Electricity Regulatory Commission (NERC), why?

MD/CEO: When we newly came in, we did a presentation to the Nigerian Electricity Regulatory Commission (NERC), with a compelling reason that showed that TCN is underfunded. The NERC agreed that we should present a case for extra-ordinary tariff review, in 2017. We sought and got the support of Power Africa, which gave us some consultants that supported our staff to prepare the case for extra-ordinary tariff review. We submitted to NERC but since then we have not heard anything from NERC.

TCN is the least paid in the industry. I don't think it makes sense because we operate high voltage. Look at it from the point of risk, TCN is exposed to more risks than anyone in the sector.

Interviewer: What is TCN's wheeling capacity?

MD/CEO: In February 2017, the capacity of TCN was around 5,000MW. As at December 2017 when we simulated the grid, it was 7,124MW. The last simulation which we did in December 2018, the capacity of the grid was 8,100MW. We are on track to moving the grid to at least 20,000MW by 2021. The grid capacity moved up due essentially to planning and the hard work of our engineers, we have installed more transformers in the last one and half to two years, more than what was done in previous 15 years. We met stranded containers of about 800 at the port; some of them had been there for over 15 years. We have recovered 730 of the 800 containers which have been taken to various sites and used for installations, and have also come up with strategies to remove the remaining ones.

The TCN engineers do the installations at 10 per cent the cost contractors charge us. What we discovered is that most of the contracts executed in the past were done by TCN staff. So, we decided to empower them directly, and we are achieving a lot of results. We also support contractors that are doing well, and sometimes help them complete their project and also pay whatever we owe them. That is how we were able to complete Kukwaba here in Abuja, Katsina, Damaturu, Wudil Daura substations. We have also installed more than 40 transformers nationwide, upgraded and strung new 132kV transmission lines among others. We have also built new substations, all these have culminated into the increased capacity.

Interviewer: Engaging in-house engineers must come with its own challenges especially from contractors?

MD/CEO: Why should it be a challenge? When contracts are not working, there are people benefiting from it, they would be angry of course. If a system is not working, it is the majority of the people that will suffer. So, our concern is the greater majority who should

benefit from the projects, I think that is more important. What is also important is that we have created a system where TCN engineers are testing their capacity. No nation should depend wholly on foreigners for everything. So, we are building the capacity of our engineers.

Interviewer: Are you still calling for the recapitalisation of the DisCos?

MD/CEO: Of course, that is what is required. Government has recapitalised TCN; we have raised \$1.623bn so far in investments in transmission, so DisCos need to recapitalise too. Let me tell you why the DisCos have to recapitalise. When we did the simulation with the Transmission Expansion Rehabilitation Programme, we also simulated up to 33kV network, and the finding is that for the DisCos to pick successfully the load we have and put all the required protection, they need at least \$4.2bn worth of investments for them to successfully take the power. Where will that money come from except recapitalisation? Infrastructure financing requires long term funding. Part of the problem we have with the DisCos is that most of the funding that they have, came from commercial banks, which are short term in nature and very expensive. We need funding that will have a repayment period of at least 5 and 10 years moratorium period; you can't get it from the financial market.

Presently, we have 738 interfaces across the country. Out of these, only 421 are fully protected with their own injection substations. The remaining interfaces in 179, have no protection at all; what happens is that faults in people's house can hit our transformers directly as there is nothing to stop it. In recent times we have lost transformers in some stations such as Karu and Kubwa in Abuja, and one in Benin, one in Onitsha. TCN investments cannot be protected if we don't have significant investments in DisCos.



MD/CEO TCN, Mr. Usman Gur Mohammed, with correspondents of SPILL Magazine during the interview

With every job one accomplishes, one is developing his/her capacity. Certainly those who excel are usually persons who took up the challenging assignments in the past and made real effort to deliver them

...U. G. Mohammed



POWER SECTOR ACHIEVES NEW DAILY ENERGY PEAK OF 110,724.93MWH

The nation's power sector achieved a new daily grid energy peak of 110,724.93MWH on Wednesday, 20th of March, 2019. This is an improvement on the previous maximum daily grid energy peak of 109,372,01MWH attained over two years ago on the 2nd of February 2016. The new maximum daily energy peak is much higher than the last one attained over two years ago by 1,352.92MWH.

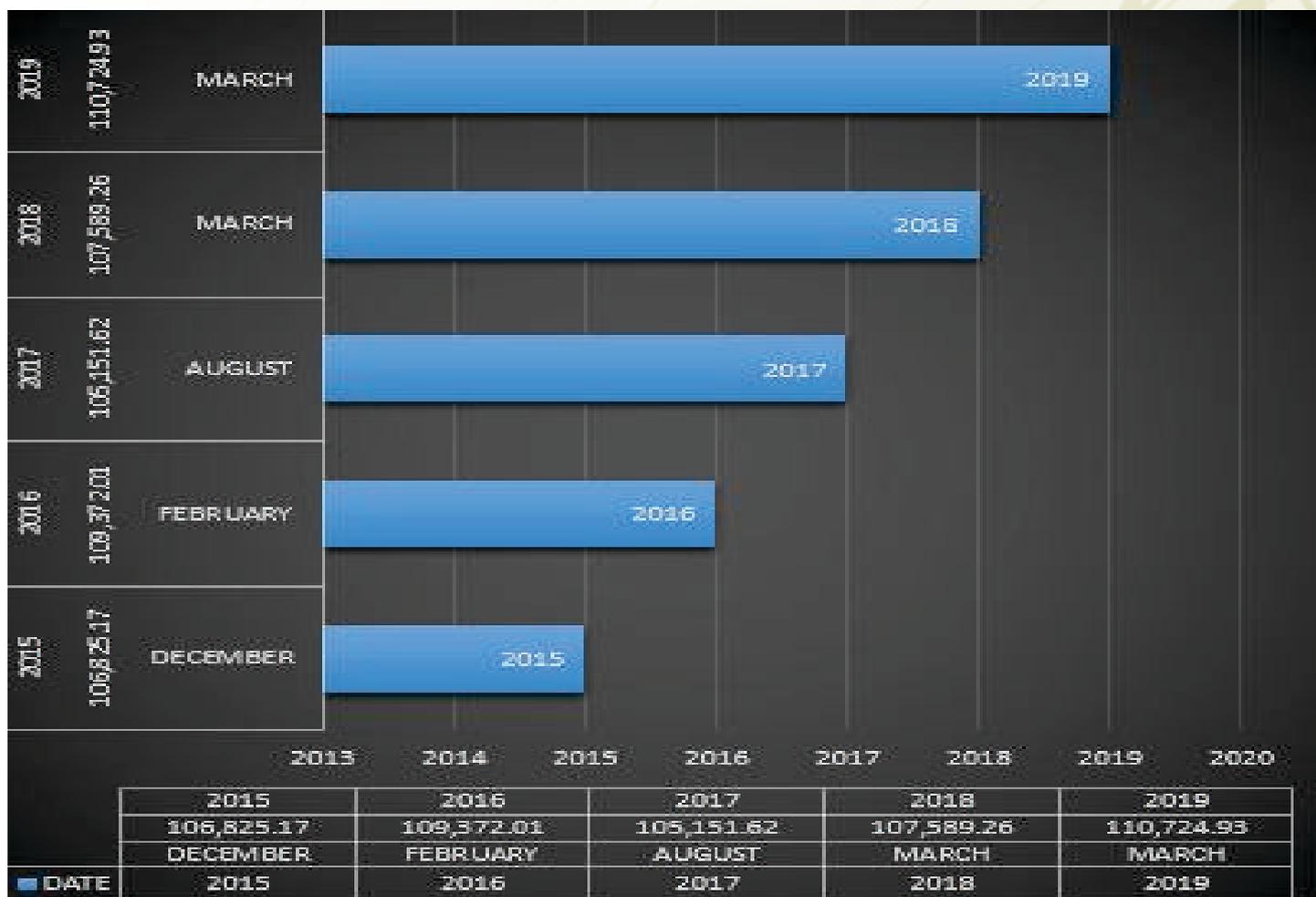
The maximum daily grid energy of 110,724.93MWH is different from the peak grid generation (power) of 5,375.0MW attained on February 7, 2019. The maximum daily grid energy refers to the quantum of

energy that is wheeled from generators to distribution load centers nationwide throughout a whole day (00.00Hrs 24:00Hrs). This is measured in Mega Watts Hour, while the peak grid generation (power) which is a singular reading or high point in grid generation is measured in Megawatts.

According to the statement, the new maximum daily energy and the peak generation (power) shows that TCN now has enhanced capacity and capability to wheel and transmit more power, over time, into the grid, provided the Distribution companies are ready to serve the load to electricity consumers. It is also an evidence

that the ongoing Transmission Rehabilitation and Expansion Program (TREP) being executed by TCN is paying off.

TCN's successful implementation of TREP is in line with this administration's incremental power policy and is poised to continue to play its role in the power sector value chain as well as ensure that its grid expansion plan is implemented on time. Implementation of TREP is tied to TCN's 20 Year Least Cost Transmission Expansion Master Plan, aimed at systematically expanding the nation's transmission grid.



POWER SUPPLY, A SINE QUA NON FOR ECONOMIC GROWTH

By Stanford Nneji

One of the major foundations upon which the manufacturing sector leverages upon to increase its contribution to the nation's economy especially in the area of job creation for the nation's teeming youth, is steady electricity supply. Power supply is a *sine qua non* for the growth of the manufacturing sector anywhere in the world.



(L-R), President of MAN, Engr. Mansur Ahmed and MD/CEO TCN, Mr. U. G Mohammed

The president of the Manufacturers Association of Nigeria (MAN), Engr. Ahmed Mansur made this known while welcoming the MD/CEO, TCN, Mr. Usman Gur Mohammed and his team, during a courtesy visit to his office in Lagos recently.

Engr. Mansur said that the core objective of MAN is to increase the contribution of the manufacturing sector to the economy, which would invariably increase employment opportunities. However, without stable and quality electric supply, Nigeria would not achieve a strong manufacturing base and the unemployment problem would be worse. It is therefore, very important that the government focuses on ways to enhance and increase availability of power as well as adopt realistic modalities that would ensure that this is realized.

On the issue of eligible customers' policy declared by the Minister of Power, Works and Housing, Mr. Babatunde Raji Fashola, he requested on behalf of MAN for update on the modalities that would enable more MAN members key effectively into the policy.

Responding, the MD/CEO of TCN, Mr. Usman Gur Mohammed

noted that the Power Sector Reform created successor companies but most of them started operations without adequate working capital and that has continued to affect their output. He noted that the best way for DisCos to handle this, is for them to recapitalize.

Irrespective of the challenges, the MD/CEO assured MAN that power supply in Nigeria would grow as necessary policies and investments are being made. On

TCN's part, he said that the company has continued to make massive investments in the transmission grid. As a result, the company has recorded definite milestones in the last two years.

The milestones, he noted, include but not limited to enhanced capacity of staff who now undertake various forms of installations without contractors; the company he said, has installed over 45 transformers, repaired 150MVA and 60MVA transformers and reconducted 330kV & 132kV transmission lines. TCN, he continued, developed the Transmission Rehabilitation and Expansion Programme which details steps to expanding and stabilizing the nation's grid as well as provide the necessary flexibility and redundancies that would enable it expand its wheeling capacity to 20,000MW by 2021 among others.

Mr. Usman informed MAN that the eligible customers' declaration is to enable power to be contracted between the customer and the generating company that would generate electricity required while TCN would only be paid Transmission Use of System charge for conveying electricity from the generator to the eligible customer. He however, noted that electricity within the eligible customer framework is more stable with contract in place for liquidated damage.



A cross section of MAN members during the visit

MORE STABLE POWER FOR NORTH EAST AS TCN PERFORMS GROUNDBREAKING CEREMONY FOR 132kV DC TRX LINE PROJECT IN NGURU

By Kazah Bili Akau



(3rd Left), Council Chairman of Nguru Local Government Area, Alhaji Ali Maidami, cutting the commissioning tape

The Federal Government through the Transmission Company of Nigeria (TCN) has revealed its intention to increase bulk power supply to the North-eastern part of the nation by 100MW with the construction of a 240KM, 132kV double circuit transmission Line from Damaturu to Gashua and terminate at Nguru, in Yobe State.

The Managing Director of TCN, Mr. Usman Gur Mohammed, who revealed this in his welcome address at the official groundbreaking ceremony of the project on Saturday, 9th February 2019, in Nguru, Yobe State, explained that the contract for the project, was awarded in 2013 but that due to funding challenges actual work could not commence until December, 2018. As a result of time lag in project execution, the MD said the contract had to be re-evaluated to reflect current economic realities.

Speaking on the timeline for the project execution, Mr. Mohammed said that TCN has significantly improved in project implementation capability and assured therefore that the Damaturu – Nguru transmission line which is slated to be completed in three years would definitely be completed on time and that TCN would closely supervise and enforce the timelines to ensure that the project was delivered on time. Dextron Engineering Limited is the contractor for the project.

Also speaking at the occasion, the Council Chairman of Nguru Local Government Area, Alhaji Ali Maidami, who also represented the Senate Majority Leader, Sen. Ahmed Lawan, commended efforts made by the federal government to improve the lives of electricity consumers in the North-Eastern part of the country with the execution of transformers and lines projects which have engendered a more robust bulk electricity

supply to distribution load centers in the axis.

Acknowledging the need to deliver the project on time, the Managing Director of Dextron Engineering Ltd, Engr. Sergiu Popa Furtos, represented by Head Operations, Engr. David Agbanuji, said that the towers for the project have already been designed and are undergoing Factory Acceptance Test (FAT) in Europe under the supervision of TCN representatives. The first out of 5 tower types to be used, he noted, successfully passed the tests up to 120% of the design loads. It is the first time a 132KV D/C tower is designed and tested for this area of the country.

The contract for 132kV Damaturu-Gashua-Nguru Transmission Line project consists of design, manufacture, supply, test, delivery to site and installation of all materials and equipment needed for the execution of the civil, electro-mechanical works and commissioning of the transmission line from the existing Damaturu 132kV Substation to the new Gashua 132kV Substation (175km) to the new Nguru 132kV Substation(65km). It is estimated that on completion of the 132kV transmission line, more than 100,000 households will enjoy a more stable and quality power supply.



TCN PLANS TO ESTABLISH TRANSFORMER REPAIR WORKSHOPS IN NIGERIA

By Eric Ene Ephraim



MD/CEO TCN, Mr. Usman Gur, addressing press men during the tour



On-going repair works by TCN's engineers on a faulty 60MVA Power Transformer

Following the recent success recorded in the repair of power transformers by in-house engineers of Transmission Company of Nigeria (TCN), the management has proposed the establishment of transformer repair workshops in the country to enhance the capacity of the company.

The Managing Director and Chief Executive Officer of TCN, Usman Gur Mohammed made this known to journalists during a tour of Karu Transmission Substation, Abuja, recently, to inspect on-going repair works by TCN's engineers on a faulty 60MVA Power Transformer at the station.

According to him, the workshops would be fully equipped with modern gadgets, which would be located in the Northern and Southern parts of the country, to enhance the ability of TCN's in-house engineers to effect repairs on power transformers and equipment more efficiently. "We intend to further enhance and grow their capacity by building at least two workshops. One in the North and one in the South to make it easier for them to do this work" he said.

Mr. Mohammed noted that TCN has lost some transformers to lack of protection equipment on the part of the Discos, at points of interface.

"Out of the 737 interfaces with Discos, only 421 have adequate protection equipment in place. 316 interfaces have either partial protection or none at all" he stated. As a result, when there is fault on any part of Discos network that does not have protection equipment in place, the fault current will flow in the system into TCN's transformers, sometimes causing a total breakdown of the transformer.

He said that TCN was working hard to ensure that all faulty transmission infrastructure are fixed to improve the power situation in the country in line with its Transmission, Rehabilitation and Expansion Program (TREP). These, he noted, include putting in place redundancy of N-1 in the network, Frequency Control, seeking approval of the Nigerian Electricity Regulatory Commission (NERC) on Spinning Reserve and making critical investment in power transformers, transmission lines and substations.

Mr. Mohammed further explained that in order to achieve the goal of on-going TREP, TCN have had to take over some failed and non-performing contracts and complete them. "Through this, we have completed Kukwaba, Damaturu, Wudil, Yauri, and Ninth Mile Substations. We have also recovered 730 out of 800

containers stranded in the ports for up to 15 years". He said.

He stated that presently, TCN engineers install transformers and other equipment at about 10 percent of what we normally pay contractors. "So we are expanding and also stabilizing the grid and I can tell you that with donor funding, we should be able to expand the grid to 20,000MW by 2021. I believe we are on track in achieving that" he said.

Also speaking with newsmen, the Assistant General Manager (Transformer Reactor) TCN, Engr. Adamu Umaru stated that the repair of the faulty 60MVA transformer in Karu Substation by TCN engineers is the second transformer repaired in-house by the company's engineers, noting that the first one was a 150MVA transformer in Kumobotso substation.

According to him, Nigeria can rely on local efforts in the maintenance and repair of transmission infrastructure as demonstrated by TCN's engineers. He stated that given the necessary backing in terms of finance, equipment and conducive environment even manufacturing of the transformers can be done here in Nigeria.

SIX TCN TOWERS VANDALISED IN DELTA STATE

Vandalism is a menace to the expansion of the transmission grid and the power sector in general. As a nation therefore, if we truly need quality and stable power supply, then the onus is on us all as citizens of Nigeria to work together to protect electricity installations nationwide.

Recently, six power transmission towers along the Delta - Benin and Delta - Sapele - Benin 330kV transmission line routes have been vandalised and some of their tower members removed. This, coupled with the heavy rainfall of March 17th caused the collapse of tower No 61 alone.

Speaking on the incident, the Asst. General Manager, (Transmission) said that the 330kV transmission line tripped, necessitating the dispatch of a lines' patrol team, to investigate the cause of the fault. Investigations revealed that tower No 61 had collapsed and aluminum conductors from the tower were on the ground. The patrol team also discovered that tower members of five other towers including the tower directly opposite tower 61 on the Ughelli - Benin line route were missing.

The Delta-Benin and Delta-Sapele-Benin 330kV transmission lines evacuate power from Transcorp Power Limited, Ughelli into the national grid. With the collapse of tower No 61 on Delta-Benin line however, TCN is now evacuating the power through Delta - Sapele-Benin 330kV transmission line alone. Although the collapsed tower has not affected power evacuation, transmission lines redundancy is effected until the second line is restored.

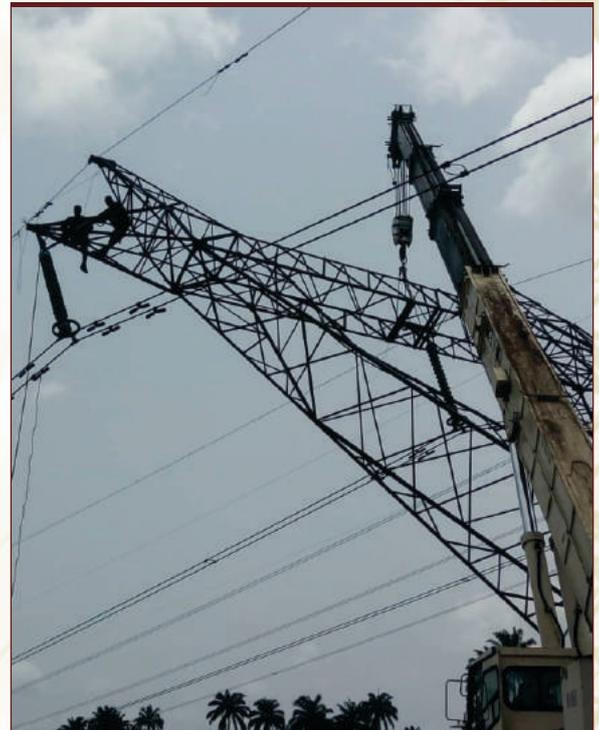
It is important to note that TCN has been facing the challenge of repeated attacks by vandals on this axis since December 2018. The

company had also made formal reports to security operatives and to traditional rulers in the area, including the King of Okpeland and the Ovie of Oghara, who have equally held meetings with their subjects to address the menace but to no avail.

Meanwhile, to forestall the collapse of the tower opposite tower 61, TCN mobilized its quick response engineering team to the site of the incident who quickly reinforced the second tower and also cataloged requirements that would enable them commence repair works on the affected towers. The materials have been procured and repair works would be completed in the 3rd week of April.

The need for host communities to watch over electricity installations in their domain cannot be over emphasized as this can help forestall the destructive activities of vandals. Equally important is the need for customers nationwide to report any unusual activities around electrical installations to appropriate authorities. This incident alone would cost TCN millions of naira to rebuild the collapsed tower and effect repairs other towers with fund that should have been ploughed into its grid expansion program.

The company however expressed commitment



Repaired works being carried out by TCN engineers

and resolve to continue to expand the nations grid including rehabilitating any of its equipment where necessary, to ensure seamless bulk electricity transmission nationwide.



One of the vandalised tower

AGIP, TCN COLLABORATE TO FURTHER EXPAND THE GRID

By Ndidi Mbah

TCN and AGIP are working together to extend electricity to Kwale and environs in Delta State as well as fortify some transmission towers legs in that axis.

The MD/CEO TCN, Mr. Usman Gur Mohammed made this known when the Management of Nigerian Agip Oil Company Limited, led by its Vice-Chairman and Managing Director, Mr. Lorenzo Fiorillo, paid a courtesy visit to TCN recently in Abuja.

Welcoming the team, Mr. Usman noted that TCN had enjoyed a mutually beneficial relationship with AGIP, saying that it is willing to move this relationship further with AGIP by working to build a 330/132kV Substation in Okpai and 132kV transmission line to Kwale, while also undertaking a study to close the loop from Okpai - Kwale - Ughelli on a 330kV transmission line.

Mr. Mohammed said the project is consistent with N-1 security standards set out in the grid code, as it would enable TCN evacuate power through the upcoming phase 2 generation output of Okpai and as well as through the proposed loop. He noted that TCN equally plans to upgrade the capacity of the single circuit 330kV transmission line from Ughelli to Benin to double circuit 330kV Quad line which will double the thermal rating capacity to about 3100MVA making it easier to evacuate the second phase of Agip (Okpai) and other generation clusters in the Southern region of the country.

The MD noted that a proposal for feasibility study had been submitted to USTDA through a consultant and that it is currently being reviewed.

Speaking on the project, the Vice Chairman/ MD of Nigerian Agip Oil Company Limited (NAOC), Mr. Lorenzo Fiorillo noted that Agip had also conducted a network study recently on the Nigerian Grid and has delivered the final results of that study to the Honourable Minister of Power, Works and Housing, Mr. Babatunde Raji Fashola. The study, he noted, contains information and technicalities needed to map and significantly improve the performance of the Grid. NAOC promised to continue to collaborate with TCN on such jointly beneficial projects. The MD stated that he understands that TCN would have its own roadmap and proposals but that both companies can still work together to integrate the plans into the project.



A cross section of participants at the meeting

According to him, it is important to simulate what will happen when the planned improvement on the network is completed, noting that possible improvements were also factored in the network simulation study. The study, he informed, had already been presented internally to AGIP Management in their headquarters in Italy and that they were very excited with the results from the simulation study. He highlighted that AGIP having worked with TCN on the study is still ready to further develop and mature the study as time goes on. He explained that the study looked at a number of factors including the impact of population increase, migration and maximized access to energy, including needed intervention and cost estimates.

On the issue of Okpai phase II, Mr. Fiorillo said that the project is on schedule, and expectedly, the first phase of the project would be ready by the third quarter of 2019. On completion, there would be increase in capacity delivered power from Okpai IPP. The Okpai project he said, is strategic not just for AGIP but also for the Federal Government and all the people involved in the project. He expressed satisfaction at the progress made so far in project execution, in spite of the financial framework which has not been fully concluded.

The NAOC MD said that with the ongoing developments, AGIP would also want to explore the possibility of new frameworks within the Nigerian Regulatory Premise such as the ancillary services and eligible customers' regime. On the issue of fortification of TCN towers being handled by the company, The MD noted that work is ongoing in earnest with the intention of completing it before the raining season. TCN & AGIP staff plan to go on a joint inspection visit to the site of the towers reconstruction for progress review.

TCN SIGNS A CONSULTANCY SERVICES CONTRACT WITH OSKA-JO & PARTNERS LTD/ PAKISTAN ENGINEERING SERVICES

By Joy Egbase

The Transmission Company of Nigeria and OSKA-JO and Partners Ltd/PES have signed a consultancy services contract agreement for the execution of the Abuja Feeding Scheme project funded by Agence Francaise de Developpment (AFD), aimed at improving bulk electricity supply into the Federal Capital Territory and its environs.



Managing Director of TCN, Mr. Usman Gur Mohammed, and Managing Director of OSKA-JO, Engr. Joseph Uujamhan

company would ensure the timely execution of the contract. He pledged to work closely with TCN engineering team to make sure service delivery is seamless.

Speaking on the impact of the project, the Project Manager, (AFD) TCN, Engr. Mrs. Jane Okemini explained that the Abuja feeding scheme project is going to provide the third source of supply of 330kV line

into Abuja which will come in from Makurdi – Jos 330kV line, through Lafia to New Apo in Abuja. This is an addition to the already existing Shiroro – Katampe 330kV line and Geregu- Ajaokuta Gwagwalada 330kV line.

The entire Abuja Feeding Scheme project she noted, includes 2No 330/132/33kV in Lugbe (West Main) and New Apo as well as 3No 132/33kV substations, in Wumba (Lokogoma), Kuje and Gwarimpa.

Highlight of the meeting was the signing of the contract agreement by the Managing Directors of Transmission Company of Nigeria and OSKA-JO and Partners Ltd/PES.

The Managing Director of TCN, Mr. Usman Gur Mohammed, while congratulating OSKA-JO & Partner Ltd for winning the contract for the consultancy service, also commended their successful supervision of the two projects completed in TCN World Bank (Project Implementation Unit) under the Nigerian Electricity and Gas Improvement Project (NEGIP). He urged them to work hard to ensure that they deliver on schedule the consultancy services contract.

In his remarks, the Managing Director of OSKA-JO, Engr. Joseph Uujamhan thanked the management of TCN for commending the company, and assured that his



Representatives from the two companies signing the consultancy services contract agreement for the execution of Abuja Feeding Scheme project



ONDO STATE GOVERNMENT SEEKS TCN SUPPORT TO COMPLETE A NEW 330kV TRANSMISSION SUBSTATION

By Azorji Uloma



(L-R), MD/CEO TCN, Mr. Usman Gur Mohammed and Deputy Governor of Ondo State, Mr. Agboola Ajayi during the meeting

The Ondo State Government has solicited the support of Transmission Company of Nigeria (TCN), to collaborate with Niger Delta Development Commission (NDDC) in the construction of a new 330kV transmission substation in Ondo South Local Government Area of the state.

The Deputy Governor, Mr. Agboola Ajayi who made this appeal during a courtesy visit to TCN management on Thursday, 24th January 2019, lamented lack of electricity in the state, especially Ondo South, which he said has affected industrialization in the state.

According to him, the construction and operation of the new substation will go a long way in solving electricity problem in the state, while assuring that all necessary requirements would be met.

He used the occasion to commend the management of TCN especially the MD/CEO, Mr. Usman Gur Mohammed for the commissioning of 2x60MVA in Akure Substation recently. He also assured that the state government will tackle the issue of vandalism of TCN equipment, and Right of way to enable all the on-going transmission projects to be completed on time.

Responding, the MD/CEO TCN, Mr. Usman Gur Mohammed, commended the Deputy Governor, for his

effort and assured him that TCN is conscious of the problems in Ondo State, and efforts are being made to solve some of them, especially the completion of the Omotosho 132kV Transmission Substation. He stated that TCN engineering team has provided some earthing transformers to supply power through auxiliary services in the substation. He promised to upgrade the substation to a full 330kV substation with an additional 150MVA, 60MVA and 100MVA.

Mr. Mohammed also reiterated TCN's commitment to delivering more bulk electricity to Ondo State with the promise to work with NDDC to ensure the swift completion of the new 330kV Transmission Substation in Ondo South.

He also disclosed that TCN has some on-going projects in the State, such as the 330kV quad line from Benin to Omotosho, and the DC 330kV transmission line from Osogbo to Akure. He however appealed to the Deputy Governor to assist in resolving way-leave issues, which is one of the major problems stalling the completion of some of its lines.



Late Mr. Abdulganiyu Biodun Ojulari
SM (PC & M) Apo Sub Region

*There are no tears today,
only memories.
Very many memories.
And unanswered questions.
That will plague us constantly.
Neither time nor reason
will change the way we feel,
for no one knows the heartache
that lies behind our smiles.*

**REST IN THE BOSOM
OF THE LORD**



Late Mr. Timothy Oyebanji
Manager (Public Affairs) CHQ

New National Peak of 5,375MW In The Nations Power Sector



The nation's grid successfully transmitted a new generation peak of 5375MW on Thursday, 7th February 2019 at 21.00hrs. This was the first time that the nation's power grid had generated, transmitted and distributed this quantum of power which is clearly an evidence of the success of this administration's policy on incremental power.

The last peak generation of 5224 MW was attained on 18th December, 2017. This has now been surpassed by the new peak of 5375MW. The peak load transmitted is a result of collective effort in the power sector value chain.

For nine consecutive days, the grid daily peak was in excess of 5,000MW from the 5th of February to the 13th of February, 2019. After the peak of 5,375MW was recorded on the 7th of February, the trend of over 5,000MW persisted, and it is noteworthy that the power sector had never had it this good as what usually obtained was a sharp drop after a new peak is attained.

DATE	PEAK (MW)
5 th February	5,014.7
6 th February	5,147.1
7 th February	5,375.0
8 th February	5,003.9
9 th February	5,001.2
10 th February	5,118.8
11 th February	5,123.7
12 th February	5,211.2
13 th February	5,144.5

As at time of report, available capacity of Generation companies nationwide was 7,450MW. The capacity of

Transmission based on the simulation of December 2018 was 8,100MW. Since the last simulation, several transformers have been added to transmission. The new combined peak shows that Distribution companies have also increased evacuation. However more work is needed on the Distribution capacities for the sector to fully stabilize.

This trend of performance is unprecedented and is an indication that the incremental power policy of the president Muhammad Buhari's Administration in the sector is positively impacting the power industry. It also shows that there has been substantial increase in investments in the sector as that is the only way such trend can be sustained.

On her part, TCN has continued to upgrade critical transmission infrastructure nationwide with the commissioning of over 45 power transformers and lines in the last two years, building of seven (7) brand new substations, diligently pursuing its Transmission Rehabilitation and Expansion Programme which is encapsulated in its 20-year Transmission Rehabilitation and Expansion Programme. TCN's wheeling capacity had increased from 5,000 in 2016 to 7,124MW in 2017 and 8100MW in 2018.

TCN is not only focusing on Grid Expansion but also on the quality of the power. In that respect, it has achieved frequency control of between 49.50Hz and 50.50Hz between May 2017 and November 2018 which had not been achieved in the history of Nigeria in the past 20 years. From December to date, the company equally achieved the best frequency control of between 49.75Hz to 50.25Hz for 85% of the time which is the best ever witnessed in the history of the Nigerian power sector.

BILLING DATA IN NEM:

THE ROLE OF MARKET OPERATIONS TECHNICAL DEPARTMENT

By Engr. E. Eje

One of the very important roles of the Market Operations in the Nigerian Electricity Market (NEM) is the provision of the primary data for billing and the production of the Settlement Statements. This all-important role is carried out by the Operations Section of the Market Operations.

The primary billing data is the metered energy data collated monthly and validated through a standardized process of energy auditing by the Technical Data Administrators (TDA) Department of the Market Operations.

Firstly, the administration of the billing data starts with the regulation of the Trading Point Energy Meters which is one of the roles of the TDA. The regulation of Trading Point Meters is through the administration of the Metering Code (MC) which has its Secretariat in the Market Operations. The TDA makes sure all Trading Point Meters comply with the Metering Code Technical Specifications. All Gencos, the TSP, the Discos and any other Market Participant in NEM are by the Metering Code mandated to transact energy exchanges at their various trading interfaces with Metering Code compliant and tested energy meters. The TDA of MO enforces this in the Market.

The monthly billing data are collated from all the Market Participants, validated and audited. This yields the total Energy generated by each Genco, the total energy evacuated by the TCN and energy received by each of the 11 Distribution Companies and all other bulk

buyers. The Transmission Loss Factor (TLF) emerges from this process by dividing the difference between the Energy evacuated from the Gencos and the actual energy received by the Discos, by same total energy evacuated from the Gencos and multiplied by 100.

The TLF is one of the performance indices for TCN – a costly one for that matter. The more the TLF exceeds the Multi Year Tariff Order (MYTO) threshold of 8.05, the more TCN loses revenue and likewise all the service providers. To make sure this index is kept on check, the TDA of MO makes sure all metering gaps and sources of energy leakages in the grid are identified and blocked. Detailed attention is equally given to the energy audit of all monthly returns from all the Market Participants.

Every metering complaint is urgently attended to by the TDA engineers. This entails frequent travelling to the field to fix faults, reprogram meters and recertify the accuracy of all the trading point meters. It is on record that Market Operations had never had any Metering Complaint that escalated into a dispute or issues resolved against MO. This write-up is not meant to drag you into the details of the Metering Code and Metering Procedure administration or the associated Metering Dispute Resolution. The TDA, no doubt, holds the ace for NEM integrity, given the transparent and stringent energy audit methodologies through which the billing data is monthly derived.

It is important to note that with the support of the MD/CEO of TCN, aggressive monitoring of the trading Point meters, transmission loss due to metering related issues had been reduced. Evidently, the Transmission Loss Factor which hit 9.97% in March 2018 had, in the last 8 months been consistently below the MYTO threshold of 8.05%. The implications of this are: 1. The evacuation efficiency of TCN has strongly improved despite occasional outages prompted by load rejection; 2. The widening metering gaps in the grid have been effectively reduced; 3. By the reduction in the TLF, all

the Service Providers no longer suffer revenue reduction in their monthly revenue inflow.

The recently declared Eligible Customers operation has been an extra source of revenue to the market and the commercial platform to make it happen has been the job

of the TDA. The Market Operations through its TDA department has been able to formalize the Eligible Customers metering, distinguish the eligible customers' energy from the pools energy as well as establish the settlement format for ease of billing.

IN-HOUSE ENGINEERS REPAIR AND ENERGISE BURNT 150MVA POWER TRANSFORMER

TCN has successfully repaired and energized a 150MVA 330/132kV power transformer which got burnt 5 years ago in Kumbotso Transmission Substation.

This is the first time TCN in-house engineers are successfully undertaking such repair work on a badly burnt 150MVA capacity power transformer and restoring it to service. It is also an indication of the growing capacity of its engineers under the present administration.

According to the GM, Engr. Alim, the Kumbotso Transmission Substation had four (4) number 150MVA power transformers. Five years ago, one of the transformers got burnt and was considered irreparable, and on the 1st of January this year, a second 150MVA tripped on fault with investigations revealing that its winding coil had spoilt and had to be moved to a transformer repair factory in Lagos.

Engr. Alim noted that to ensure that Kano Disco load centers taking supply from this substation still receive supply for its customers, TCN engineers first re-arranged load from the tripped transformer into the two



TCN engineers at work

(2) 150MVA transformers and then commenced work on the burnt 150MVA power transformer on the 2nd of January, using its in-house engineers. The engineers opened the burnt transformer and removed the yellow, blue and red phases of the burnt diverter switches, replaced them and carried out other works

inside the transformer before it was re-energized on the 2nd of February, 2019.

The successful repair of the 150MVA power transformer restored the substation capacity to 450MVA. TCN equally mobilized a brand new 150MVA power transformer from Lagos port which has arrived the Kumbotso Substation and is currently being installed.

With the three 150MVA transformer however, TCN is comfortably supplying normal bulk power to Dakata Transmission Substation and Kano distribution load centers taking supply from this substation to Katsina, kankia and environs. As soon as installation works on the new 150MVA is completed, the transformer would provide the necessary redundancy in the substation.

TCN INSTALLS THREE POWER REACTORS IN IKOT EKPENE, JOS AND APIR 330KV TRANSMISSION SUBSTATIONS

The Transmission Company of Nigeria (TCN) procured three (3) number reactors, which were deployed to Ikot Ekpene, Jos and Apir Transmission Substations for installation. The reactors were to help correct the voltage problem along the 330kV Ikot Ekpene- Ugwuaji-Makurdi- Jos Transmission Line axis.

The 330kV line had been exposed to constant voltage instability up to 360kV at the Ikot Ekpene, Makurdi and Ugwuaji end of the transmission line route, due mainly to lack of reactors. TCN procured three new reactors that are being installed in Ikot Ekpene, Jos and Apir Substations. The reactors would serve to substantially stabilize high voltage along that transmission line route.

The transmission line however has other design errors

which includes lack of transposition of the 330kV lines and lack of fiber optic on the Ugwuaji –Makurdi part of the transmission line, which is necessary for effective SCADA operations. The company is however committed to attending to the problems in line with its Transmission Rehabilitation and Expansion Plan, to ensure that voltage issue on that line is permanently solved.

TCN is working to solve the fiber optic problem on the Ugwuaji – Makurdi axis of the 330kV Ikot Ekpene – Jos Transmission line. The transposition problem on the other hand is also being addressed.

TCN is committed to expanding the nation's grid and is currently investing massively in human and capital development to ensure grid stability in line with its 20year master plan.



Reactor main tank



The accompanied accessories



The accompanied accessories

COMMUNIQUÉ

Issued at the end of the 3rd meeting of the Nigerian Electricity Regulatory Commission (NERC), with Nigerian Electricity Supply Industry (NESI) stakeholders on February 11th, 2019 at the Transcorp Hilton Hotel, Abuja

The 3rd Meeting of the Nigerian Electricity Regulatory Commission (NERC) with the Nigerian Electricity Supply Industry (NESI) Stakeholders was held on February 11, 2019 at the Transcorp Hilton Hotel, Abuja. The licensees of the Commission and other stakeholders were fully represented at the highest levels of executive management. The Permanent Secretary (Power), Federal Ministry of Power, Works & Housing and other relevant Directors of the Ministry were also in attendance.

In his opening remarks, the Chairman of NERC, Prof. James Momoh, emphasised the importance of delivering on the commitments agreed at the last meeting, specifically, the commitments to address customer care, metering, grid stability and a sustained improvement in the supply of electricity to customers.

The Chairman set the tone of the 3rd meeting by prescribing a very participatory and interactive approach to facilitate the identification of realistic, measureable and implementable solutions to the current challenges bedeviling the electricity industry and to assign actionable items and associated timelines to stakeholders, with the Commission monitoring the implementation of these resolutions. He stated that the meeting would focus on the three under-listed industry issues to allow time for detailed discussion:

a. Resolution of mismatch at

TSP/DisCo interface points;

b. Identification and resolution of factors limiting the optimal dispatch of generated capacity of GenCos and associated communication challenges.

c. Management of planned outage schedules including communication to electricity customers and timely response to customer complaints.

Following an extensive deliberation on the state of the electricity industry and the urgency to improve distribution of electrical energy and service delivery by all the electricity distribution companies, the following action items were agreed:

(i) All the electricity distribution licensees shall submit details of transmission challenges limiting the off-take of energy as well as matching projects being implemented by the utilities to improve throughput of the energy. The submissions shall include delivery timelines and impact on service delivery.

(ii) TCN shall submit to NERC a report of specific transmission projects being undertaken for the purpose of debottlenecking the supply of electricity to load clusters and timelines for completion by Friday, February 15, 2019. NERC shall convene special one-on-one sessions with TCN and the DisCos on interface issues to ensure an alignment of TCN investments with DisCos' needs and anticipated load growth. NERC shall develop a project summary template based on

presentations made by each DisCo on interface challenges with TCN and a Workplan developed to facilitate the monitoring of the critical projects being implemented by DisCos and TCN.

NERC shall appraise and monitor the identification and implementation of all critical capital projects with a view to ensuring prudence and relevance to current challenges of the NESI.

(iii) A tripartite Committee shall be facilitated by the Commission comprised of the DisCos, consumer groups and their respective host states for the purpose of enhancing better relationships between the stakeholders and pursuit of lasting solutions to potential conflict situations that may arise with operators, including customer restiveness, information asymmetry and other related matters.

(iv) NERC shall review and monitor the operationalisation of the Merit Dispatch Order of generation plants taking into account dynamic load forecast and contractual terms underpinning the Power Purchase Agreements.

(v) NERC shall review the disconnect between energy received by DisCos and market remittance and to ensure that the practice of discretionary upstream payments are eliminated.

(vi) NERC shall follow-up with operators on actionable items agreed at the meeting in order to monitor, track and follow-through on their implementation.

KNOW YOUR SUB STATIONS



BRIEF ON YANDEV 132/33kV TRANSMISSION SUBSTATION, BENUE STATE

INTRODUCTION

Yandev 132/33kV Substation is situated at Amua Yandev near Gboko. The Substation is fed from New Haven Transmission Substation through the New Haven - Otukpo - Yandev 132 SC line which was constructed in the 70s. The Yandev 132kV Substation at the completion of the on-going 60MVA transformer will have an installed capacity of 165MVA.

There are 5No 33kV out-going feeders in the substation.

PROJECT TIMELINE

There are ongoing several projects in the sub-station amongst which are:

HIGHLIGHT OF THE ON-GOING PROJECT

- Construction of Kashmbila Power Station, Wukari - Yandev 132kV double circuit line
- Expansion of Yandev 132KV Substation

- Upgrading of the capacity of the substation from 2 x 15MVA 132/33kV transformers to 2 x 60MVA 132/33KV transformers.
- Expansions and refurbishment of the Control Room
- Replacement of protective/control panels
- Regraveling of the station and providing drainage, cable trenches and access road to the station.

SOCIO ECONOMIC BENEFITS

- The Sub Station will evacuate 40MW to the national grid from Kasmabila Power Station
- Provision of quality energy supply to Dangote Cement
- It will improve power availability of high quality to Gboko town in particular and Benue State in general and provide conducive environment for investors.

Staff Issues



3rd Left: Mr. Sanni Raji PM (F&A) during his retirement ceremony at TCN CHQ



(Middle), Engr. Ayeni, PM (Substation Project), during his retirement ceremony at TCN CHQ



3rd Left, Mr. Segun Adeyoju, (PM) HR, ISO, during his retirement ceremony at TCN CHQ



2nd Left, Mr. C. Agbo, PM (HR), Enugu Region during his retirement ceremony at Enugu Sub-region



"She turned her cant's into cans, and her dreams into plans." Some accolades for the General Manager (ICT) TSP, Mrs. Morie Omolola Oludade who was officially admitted as fellow of Nigeria Computer Society (NCS), on the 16th of November 2018, during the 40th Anniversary and National Information Technology Merit Awards (NITMA) 2018 in Lagos



Conferment of Fellow to Head TSP, Engr. Victor Adewunmi, during the 10th NSE fellowship and Conferment of award on Friday, 22nd March 2019



PSCT SEEKS INTER-AGENCY PUBLICITY

With the dynamic and rapid developments taking place in the Nigerian Electricity Supply Industry (NESI), the Coordinator of the Power Sector Communications Team (PSCT) and Special Adviser to the Minister of Power, Works and Housing on Media, Mr. Hakeem Bello, has said that there is need for effective inter-agency communication and promotion of each other's activities on various platforms including publications and radio/television programs sponsored by agencies in the sector.

Mr. Bello made this known during the PSCT monthly meeting hosted by Rural Electrification Agency (REA) on Wednesday, 13th March 2019, in Abuja. This he said, would increase public awareness on power sector achievements and activities which he said, has not been adequately communicated to the publics.

During the meeting, member agencies gave brief highlights of achievements of their agencies. The representative of the Ministry of Power, Works and Housing noted the Ministry recently inspected various milestone projects, such as the 40KW solar energy plant in Kaduna State, 60KW interconnected solar project in Sokoto State and 700MW project in Zungeru, Niger State. The Ministry also reviewed Eligible Customer status, Mini Grid license status and the implementation of the Electricity Power Sector Reform (EPSR) Act

among others.

The Nigeria Electricity Management Services Agency (NEMSA) has upgraded its Meter Station and Chemical and Engineering Laboratories in Ijora, Lagos State and has also begun the process of giving ISO Certification of electrical contractors in the power sector and Bureau of Public Enterprise (BPE) has concluded arrangements to evaluate technical bids for Afam and Yola Power Plants and has renamed its in-house magazine from Privatization Digest to the Reformer.

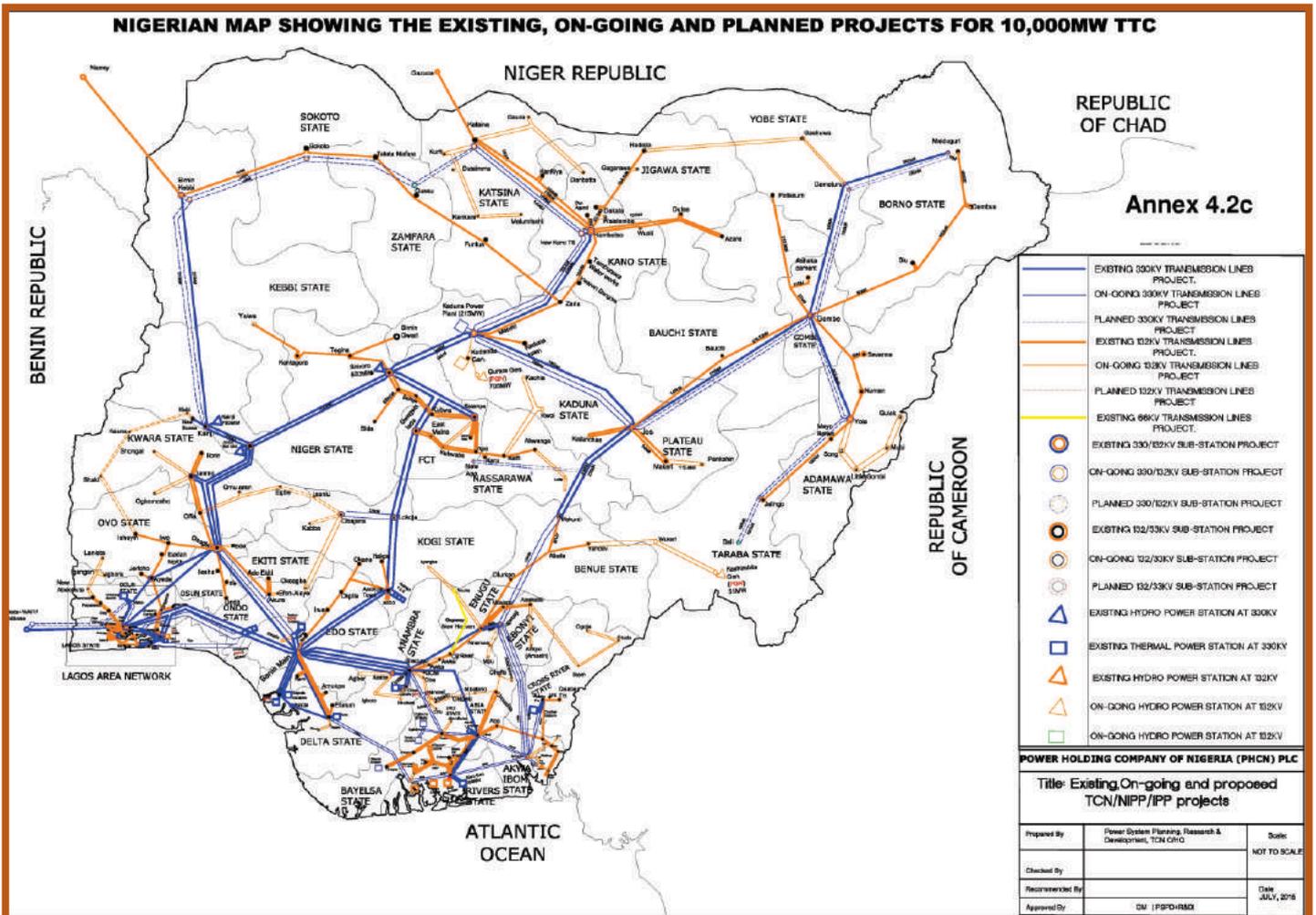
The representative of Niger Delta Power Holding Company Limited (NDPHC) noted that the company is constructing a 132kV and 330kV substation in Lafia, Nassarawa State and that it is focusing more attention on executing distribution projects.

Rural Electrification Agency (REA), on the other hand recently conducted community engagement exercise under the Nigerian Electrification projects across four states in Nigeria, as well as facilitated the commissioning of the Independent Power Project in Ariaria Market, Abia State. The agency plans to host a technical workshop for mini grids and sola home systems under the Nigerian Electrification project for private developers.



NEWLY INSTALLED TRANSFORMERS (JANUARY-MARCH, 2019)

S/N	SUBSTATION	CAPACITY BEFORE ADDITIONAL INSTALLATION	NEW TRANSFORMER CAPACITY (MVA) ADDED	TOTAL CAPACITY IN SUBSTATION AFTER INSTALLATION	COMMUNITIES THAT SHOULD BENEFIT	DISTRIBUTION COMPANIES AFFECTED BY CAPACITY INCREASE	MEGAWATTS ADDED TO THE GRID
1	Illashe Island	NIL	30MVA	30MVA	Illashe, Ibese, Ikare, Igbologun, Ilado, Odo	Ikeja Electric Distribution Company (IEDC)	24MW
2	Yauri	NIL	80MVA	80MVA	Yauri, Zuru, Koko, Ibeto, Nasko, Shanga, Wara, and Salka	Kaduna Electricity Distribution Company (KEDC)	64MW
3	Molai	NIL	150MVA, 60MVA	210MVA	Monguno, Marte, Dikwa, Gwoza, Bama, Kwaya-kusar, Chibok and Ubah Transmission Substations	Yola Electricity Distribution Company (YEDC)	168MW
4	Damaturu	NIL	150MVA, 60MVA	210MVA	Gaidam, Buni Yagi, Buni Gari, Ngamdu, Baimari, Yunusari Damaturu Metropolis and environs.	Yola Electricity Distribution Company (YEDC)	168MW
5	Hadeja	NIL	60MVA	60MVA	Jigawa and environs	Kano Electricity Distribution Company (KEDC)	48MW



GRID MAP SHOWING EXISTING, ON-GOING, AND PLANNED PROJECTS FOR 10,000 TTC

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