

TRANSMISSION COMPANY OF NIGERIA (TCN)

MILESTONES

**FEBRUARY 2017
TO SEPTEMBER 2018**

TCN...wheeling power for national economic development



Introduction

Transmission Company of Nigeria (TCN) is the only company out of the 18 successor companies unbundled from the former PHCN that is not privatised. A Management Contract of four years was signed between FGN and Manitoba Hydro International (MHI) meant to provide technical and managerial expertise, to improve the operational efficiencies and overall performance of the company. The MHI contract ended on August 31, 2016 without achieving its objective, and government in its wisdom did not extend it further.

The Deputy Managing Director under MHI took over the management of the company after the departure of MHI on August 31, 2016, and headed the company until February 1, 2017 when a new management was appointed to take over the affairs of TCN. MHI left TCN in total disarray. There was no audit throughout the period it was managed by MHI and procurement was done without due regard to economy and efficiency. The six Managing Directors were reduced to three (MD TSP, MD ISO and MD/CEO TCN). Management of TCN was bloated to 5 Executive Directors, 46 General Managers and 132 Assistant General Managers as against 2 Executive Directors, 10 General Managers and 11 Assistant General Managers inherited from PHCN (which was even then said to be top heavy in the Change Management Consultancy Report undertaken by Red Electrica/Accenture in 2005).

▲ **Transmission Rehabilitation and Expansion Program**

TCN Management in February 2017 under UG Mohammed, established the Transmission Rehabilitation and Expansion Program (TREP). The Development Objective (DO) of the Program is to ***Rehabilitate, Stabilize, Provide Necessary Flexibility, Redundancies and Expand the Wheeling Capacity to 20,000MW by 2021***. To achieve the DO, TCN needed to achieve the following four milestones; achieve System ***Frequency Control***; provide adequate ***Spinning Reserve***; functional ***Supervisory Control and Data Acquisition (SCADA)*** and achieve critical Investment in Lines and Substations

▲ **Attainment of Effective System Frequency Control.**

This basically refers to Management of the speed at which turbine generators are running at a given time. This is necessary because the National Demand (aggregate of

all the loads taken by DISCOs and other class of customers connected to the Grid) is not constant. The automatic monitoring and controlling of speed of generators in response to changes in demand is called "**Governor Control**". In June 2017, TCN achieved a Frequency Control between **49.50Hz and 50.50Hz**, which is first of its kind in the last 20 years. This achievement has been sustained. TCN has established a strategy for achieving the WAPP standard frequency control of **49.80Hz and 50.20Hz** and waiting for the appropriate time to implement it.

▲ **Provision of Adequate Spinning Reserve.**

At present, the Spinning Reserve of TCN on the daily load broadcast is either **40MW or 0**. With a Generation of between **4,500 to 5,000MW**, the expected standard spinning reserve requirement is 450MW representing 10%. Spinning Reserve is an auxiliary service provided in grid management to meet huge shock that may lead to system collapse.

Management of TCN established a committee under the leadership of the Current Head (ISO) with membership from GENCOs. The objective of the committee was to find out why generating companies contracted to provide spinning reserve were not doing so. The Committee established that the tariff for spinning reserve was not adequate and came up with suggestions which were forwarded to NERC in 2017. NERC gave approval for competitive procurement of 300MW of spinning reserve in first instance. **TCN has since advertised the competitive procurement of 300MW of Spinning Reserve (first time in the History of the Power Sector).**

▲ **Provision of functional Supervisory Control and Data Acquisition (SCADA).**

SCADA is a system that operates on coded signals over a communication channel. It is a tool for system operations and monitoring for effective grid management. NEPA/PHCN/TCN attempted to procure SCADA/EMS/Telecoms three times which were not entirely successful. The current SCADA/EMS was financed by the World Bank but can only see about 40% of the network with lots of deficiencies. In February, 2017 Management established a SCADA Committee with the objective of identifying reasons for failure of the three attempts to establish a functional SCADA. The findings of the committee led to some modifications of the SCADA Scoping Consultancy Report which was submitted in December 2017.

One important thing to note here is that the previous procurement of SCADA were all won by one firm. To ensure quality, the new scoping report avoided a situation where our document detailing the scope of works is tilted towards a particular vendor. TCN organized an international conference on SCADA in July, 2018 which had in attendance three National Grids (Power Grid of India, GridCo of Ghana and TARNAs of Italy), all the SCADA OEMs also attended. The Scoping Report was given to the participants about a month before the conference. The outcome of the conference has significantly improved the scoping report.

The SCADA conference also confirmed that the decision to cancel the two fibre optic concession contracts over non-payment by the concessionaires was in fact the right thing, if Nigeria intends to have a functional SCADA system.



Cross Section of Participants at the TCN International Conference on SCADA/EMS/Telecoms at Transcoop Hilton Hotel Abuja in June 2018

▲ **Critical Investment in Lines and Substations.**

Under this component, TCN plans to rehabilitate and expand transmission lines and substations across the country, consistent with international standard N-1 stability criteria. TCN is using in-house capacity to install abandoned transformers and associated key equipment, complete transmission lines, in various substations and also assist contractors complete it within record time. Under the program, TCN employs various forms of finance to ensure the completion of some of the existing contracts.

▲ **Use of in-house TCN engineers to install transformers.**

This assisted significantly in expanding the grid. The process started with the installation of 40MVA at Damboa. Under this method, TCN engineers installed transformers sometimes at less than 10% of the cost usually awarded to contractors. Using the same method, TCN engineers are currently building a 132/33kV substation on an island called Ilashe in Oriade LGA of Lagos State. Other installations carried out under this arrangement includes:

S/No.	Location	Transformer Capacity
1	Dambua 132/33kV Substation	1X40MVA
2	Aja Lagos 330/132/33kV Substation	1X60MVA
3	Aja Lagos 330/132/33kV Substation(Mobile)	1X60MVA
4	Ejigbo 132/33kV Substation	1X40MVA
5	Umuahia 132k/33kV Substation	1X40MVA
6	Zaria 132/33kV Substation	1X40MVA
7	Funtua 132/33kV Substation	1X60MVA
9	Gombe 132/33kV Substation	1X30MVA
10	Auchi 132/33kV Substation	1X40MVA
11	Ilashe 132/33kV Substation (95%)	1X40MVA
12	Dan Agundi (rehabilitated burnt transformer)	1X60MVA



Minister of State II Survy Suleman Hassan during the Commissioning of 1X30MVA 132/33kV at the Gombe 330/132/33kV Substation in June 2018 (on His left is Head TSP)

Lines completed between February 2017 to September 2018

- *Asaba-Benin 330kV Transmission Line which was partially executed three years ago.*
- *Energised the 2nd circuit of the Ajaokuta-Gwagwalada 330kV Transmission Line, on single circuit in 2015.*
- *Brought into circuit the 2nd line of the Jebba-Kainji 330kV Transmission Line that was out for more than five years due to lack of 330kV breaker*
- *Mando-Power 132kV line reconductoring, carried out between January to June 2018 using higher capacity conductors.*
- *Tee-off on the New Haven-Oturkpo Transmission Line and construction of 5 KM 132kV transmission line through in-house capacity/collaboration with Enugu State Government and have also energised the 40MVA Substation at Nsukka.*
- *Contract has been awarded to Siemens and GE for the 2nd 330kV Egbin-Aja 330kV and 132kV GIS Substation that has been out for more than 5 years*
- *Use of TCN in-house engineers to complete old contracts. This has assisted greatly in completing several projects across the country. It has also assisted in the several contracts budget overrun which previously characterised TCN project implementation. Few contractors allow smooth takeover while others fight TCN in their effort to continue with such contract most of which had already expired. These include the following:*

S/N	Contractor	Location	Capacity
1	New Engineering	Kukuwaba Abuja	2X60MVA
2	GIT	Karu Abuja	1X60MVA
2	GIT	Uyo, Akwa Ibom	1X60MVA
3	GIT	Aba, Abia State	1X60MVA
4	GIT	Ekim Akwa Ibom (90%)	1X60MVA
5	Fedders Lloyd	Dan Agundi	1X60MVA
6	Fedders Lloyd	Ijebu Ode	1X60MVA
7	Sahel	Bauchi	1X60MVA
8	Con Engineering	Wudil	1X40MVA
9	Carltek	Damaturu	1X150MVA
9	Cromtom Grip	Maiduguri	1X150MVA 1X60MVA
10	Incom Electric	Yenogoa	1X60MVA
10	KEC	Gombe-Damaturu Line	NA
11	Optic One	Katsina-Daura 132kV line	NA
12	KEC	Damaturu-Maiduguri	NA

▲ Contracts completed by Contractors.

It is the policy of TCN to assist contractors to ensure early completion of projects. It is also no longer news to them that several contracts have been cancelled and are either completed or have been completed by TCN engineers. This has sent the right signal which has assisted greatly in timely projects implementation in TCN.

S/N	Contractor	Location	Capacity
1	JSPDI	Abeokuta (replacement)	2X60MVA
2	JSPDI	Ejigbo (replacement)	2X100MVA
3	JSPDI	Alimosho (replacement)	1X100MVA
4	JSPDI	Zaria	1X60MVA
5	JSPDI	Mando (330kV)	1X150MVA
6	JSPDI	Bida Niger State	1X60MVA
7	JSPDI	Akure	1X60MVA
8	JSPDI	Kaduna Town (Replacement.)	2X60MVA
9	JSPDI	Ado Ekiti	1X60MVA
10	JSPDI	Bida Niger State	1X60MVA
11	JSPDI	Mando Kaduna(330kV)	1X150MVA
12	Power Control	Ukpela Edo State	1X60MVA
13	MBH	Katampe Abuja	1X100MVA
14	MBH	Keffi Nassarawa	1X60MVA
15	MBH	Apo Abuja	1X100MVA
16	MBH	Calabar	1X60MVA
17	MBH	New Haven	2X60MVA
18	MBH	Jos	1X60MVA
19	MBH	Mayo Belwa	1X40MVA
20	MBH	Suleja (replacement)	2X60MVA
21	MBH	Ikeja West (330kV)	1X300MVA
22	Junot	Hadeja	1X60MVA
23	Junot	Katsina	1X60MVA
24	Junot	Kontagora	1X60MVA
25	Televeras	Afam River State	1X150MVA
26	Lagacy	Odogunyan	2X60MVA
26	Kailash-Busdor	Nibo-Awka	1X60MVA
27	JSPDI	Papalento	1X60MVA



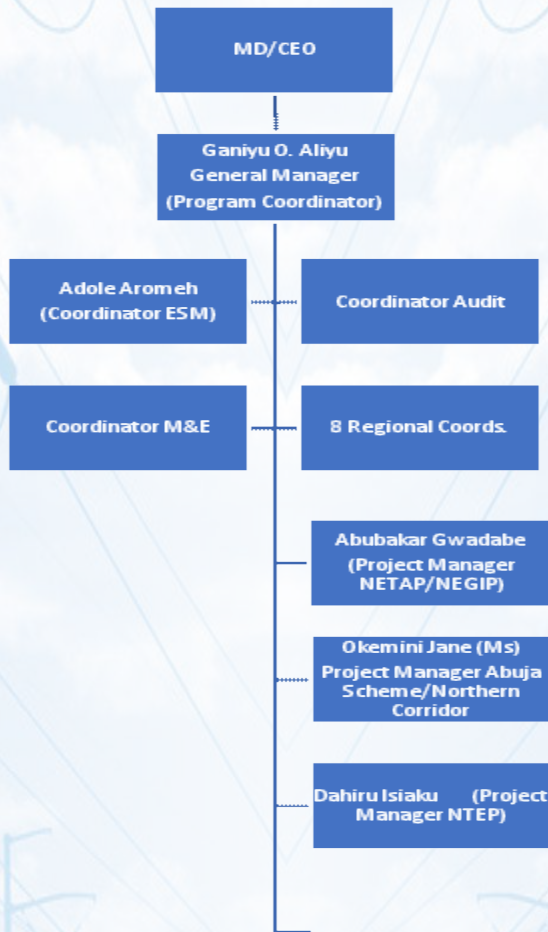
Minister Power Works and Housing Discussing with the MD at the commissioning 132/33kV Substation at Odogunyan Ikorodu Lagos State in March 2018

Implementation of Donor Funded Projects were also reinvigorated. As at February 2017, when the new management took over the affairs of TCN, "NEGIP" a Project financed by the World Bank and approved in 2009, had only 50% disbursement rate. The management reviewed the project and found that, out of seven contracts, only two can be said to be successful. Armed with information on the poor implementation of NEGIP, management drafted a strategy for the implementation of donor funded projects in TCN. This saw the delivery of audited financial statements for 2012-2014 and 2015 within a period of three months from inception of the new management.

TCN introduced prequalification for all donor funded projects. The qualification criteria were also significantly increased in such a way that requirements from all parties in a joint-venture or consortium agreement with the aim of participating in the procurement process of TCN's donor funded projects were defined in the bidding document.

Four new Project Management Units (PMUs) were created to replace the two PMUs existing at that time in TCN. All the key staff of the four PMUs were selected through a competitive selection method. Each of the PMU is headed by a Project Manager, two Substation and Line Coordinators and Project Accountant, Procurement Officer with

other support staff. Below is the top level organizational structure for implementation of donor projects.



In the face of donor demand for up scaled level of transparency and project implementation capacity before granting support to TCN. Management worked hard and submitted Audited Financial Statements of the organization and created four fully staffed PMUs. In addition, Project Managers of the PMUs and their procurement officers were trained on procurement both at ILI, Washington and at SETYM, Canada. By September 2017, TCN received a total of \$1.57 billion as pledge from Donors.

The status of implementation of donor funded projects as at September 2018

• **Abuja Transmission Ring Scheme is financed by the French Development Agency (\$170 million).** The procurement process has reached the final stage; two contracts for the lines have been signed and the remaining lots for substation projects have been evaluated and submitted to AFD for No Objection. This project will fund five new substations and a new 330kV transmission line to Abuja through Lafia (entirely Green field project). Details of the Abuja Project:

S/N	REGION	LOCATION	DESCRIPTION	
1	North Central	Abuja	New Apo	Construction of about 172km of new 330kV double circuit line from Lafia 330kV Substation (new) to the proposed New Apo 330/132/33kV Substation.
2	North Central	Abuja	Old Apo	Construction of about 7km of new 132kV double circuit line from new Apo 330/132/33kV substation to Old Apo 132/33kV substation:
3	North Central	Abuja	Old Kuje	Construction of 35km of new 132kV double circuit line from New Apo 330/132/33kV substation to the proposed Kuje 132/33kV substation.
4	North Central	Abuja	West Main Lugbe	Construction of 29km of new 132kV double circuit line from the proposed Kuje 132/33kV Substation to West Main (Lugbe) 330/132/33V substation.
5	North Central	Abuja	New Apo	Construction of complete new 330/132/33kV substation at New Apo to be equipped with 2No.150MVA, 330/132kV transformers and 3No. 60MVA, 132/33kV transformers including 6 X 132kV line bay and 2 X 132kV line bay extension at Old Apo 132kV Substation.
6	North Central	Abuja	West Main Lugbe	Construction of complete new 330/132/33kV substation at West Main (Lugbe) to be equipped with 2X150MVA, 330/132kV transformers and 3No. 60MVA, 132/33kV Transformers (with 132kV outdoor GIS Switchgear) including 2 x 330kV line bay, 4X132kV line bays.
7	North Central	Abuja	Kuje	Construction of complete new 132/33kV substation at Kuje to be equipped with 3No. 60MVA, 132/33kV transformers including 4 x 132kV Line Bay
8	North Central	Abuja	Wumba/Lokogoma	Construction of complete new 132/33kV Substation at Wumba / Lokogoma to be equipped with 2No.60MVA, 132/33kV transformers, 2 X 132kV line bay including 5km underground 132kV XLPE Cable line, from New Apo to Wumba/Lokogoma

9	NORTH CENTRAL	ABUJA	Gwarimpa	Construction of complete new 132/33kV GIS substation at Gwarimpa to be equipped with 2No. 60MVA, 132/332kV transformers including OHL / Underground Cable termination of the existing 132KV Katampe–Suleja Transmission line.
10	NORTH CENTRAL	ABUJA	ERM	Establishment of ERP in TCN for effective management of its assets
11	NORTH CENTRAL	ABUJA	Project Management	Consultancy and other Running cost

• ***Nigeria Electricity Transmission Access Project (NETAP) financed by the World Bank (\$486 Million).*** The project started with advanced procurement in 2017 and was approved by the board of the World Bank in February 2018. The procurement of the project has reached advanced stage but it is yet to become effective as it is still awaiting approval and Legal Opinion of the Attorney General and Minister of Justice. This project is entirely brown field geared toward upgrading most of the transmission substations to N-1 redundancy criteria. Detailed scope of the project includes:

	REGION		SUBSTATION	DESCRIPTION
1	North West	Kaduna	Kumbotsho	Reinforcement with 1 x 300MVA 330/132kV Power Transformer, High Voltage Switchgears and Associated Equipment, Replacement of Control and Relay Panel with Digital Control System
2	North West	Kaduna	Dakata	Reinforcement with 1 x 100MVA 132/33kV Power Transformer, Switchgears, Associated Equipment, Digital Control System. Supply & Installation of Additional 3 No. Feeders Bay and Rehabilitation of Control Room
3	North west	Kaduna	Kankia	Replacement of Faulty 1 x 30MVA and Upgrading of 1 x 30MVA Transformer to 2 x 60MVA 132/33kV Transformer, High Voltage Switchgears and Associated Equipment Including Digital Control System.
4	North west	Kaduna	Dan Agundi	Reinforcement of 1 x100MVA 132/33kV Transformer, High Voltage Switchgears and Associated Equipment including Digital Control System and Rehabilitation of Control Room

5	North West	Shiroro	Birin kebbi	Reinforcement with 2 x 150MVA 330/132kV and Installation of 1 x 60MVA 132/33kV Power Transformer with associated 3no. Outgoing 33kV Feeders and Rehabilitation of Control Room
6	North Central	Shiroro	Shiroro	Replacement of Obsolete Control and Relay Panels with Digital Control System, High Voltage 330kV Switchgears and Associated Equipment
7	North Central	Shiroro	Abuja Central Area	Upgrading of 2 x 45MVA with 2 x 100MVA 132/33kV Power Transformer, High Voltage Switchgears, Associated Equipment Including Gas Insulated Substation, Rehabilitation of Civil Structures of the Control Room and Digital Control System.
8	North central	Shiroro	Kainji	Rehabilitation of the 330kV Substation, High Voltage Switchgears, Associated Equipment. Rehabilitation of Control Room including Digital Control System.
9	South East	Port Harcourt	Alaoji	Rehabilitation of 330kV Substation, 330kV Control room, Digital Control System and Replacement of High Voltage Switchgears and Associated Equipment.
10	South East	Port Harcourt	Aba	Rehabilitation of 132kV Substation, 132kV Control room, Digital Control System and Replacement of High Voltage Switchgears.
11	South South	Port Harcourt	Port Harcourt Main	Reinforcement with 1 x 100MVA 132/33kV Power Transformer, Control Room, High Voltage Switchgears and Associated Equipment.
12	South South	Port Harcourt	Port Harcourt Town	Reinforcement with 1 x 100MVA 132/33kV Power Transformer, Control Room, High Voltage Switchgears and Associated Equipment.
13	South South	Port Harcourt	Itu TS	Reinforcement with 1x 60MVA 132/33kV Power Transformer, High Voltage Switchgears, Associated Equipment. Rehabilitation of Control Room including Digital Control System.
14	South East	Enugu	New Haven, Enugu	Reinforcement with 1 x 150MVA 330/132/33kV, 2 x 60MVA Transformers with Associated Equipment, Replacement of High Voltage Switchgears and Rehabilitation of Control Room with Digital Control System.
15	South East	Enugu	G C M TS, Onitsha	Reinforcement of 1Nos. 60MVA 132/33kV Power Transformer, High Voltage Switchgears, and Associated equipment.
16	South East	Enugu	Abakaliki	Upgrade of 1x30MVA to 60MVA 132/33kV Power Transformer, High Voltage Switchgears, and Associated Equipment.
17	South East	Enugu	Orji river	Reinforcement of 1Nos. 60MVA 132/33kV power Transformer, Switchgears, associated equipment and devices.
18	South East	Enugu	Ugwuaji	Supply and Installation of 1x75MVar Reactor and 1 x 60MVA 132/33kV High Voltage Switchgears, and Associated Equipment.
19	North Central	Enugu	Otukpo	Upgrading of 7.5MVA Power Transformer to 1x 60MVA 132/33kV Transformers, High Voltage Switchgears and Associated Equipment.
20	North Central	Enugu	Apir, Makurdi	Reinforcement with 1x150MVA 330/132/33kV and 1x 60MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.
21	North East	Bauchi	Yola	Reinforcement with 1 x 150MVA 330/132kV and 2x 100MVA 132/33kV Power Transformers, High Voltage Switchgears, and Associated equipment with 3 No Additional Feeder Bays
22	North East	Bauchi	Mayo Belwa	Reinforcement with 1Nos. 150MVA 330/132kV power Transformer, High Voltage Switchgears, and Associated Equipment, with 3 No Additional Feeder Bays
23	North East	Bauchi	Jalingo	Upgrading from 132kV to 330kV Substation with 1x150MVA, 330/132/33kV Power Transformer and 1 x 100MVA 132/33kV Transformer, High Voltage switchgears and Associated Equipment. Construction of 330/132kV Control Room
24	North East	Bauchi	Damaturu	Reinforcement with 1Nos. 150MVA 330/132kV power Transformers, High Voltage Switchgears, and Associated Equipment with 3 No Additional Feeder Bays

25	North East	Bauchi	Biu	Reinforcement of 1 x 60MVA 132/33kV Power Transformer, High Voltage Switchgears, Associated Equipment. And Complete Rehabilitation of Substation
26	North East	Bauchi	Dambo	Reinforcement of 2x 60MVA 132/33kV Power Transformers, High Voltage Switchgears, Associated Equipment. And Complete Rehabilitation of Substation
27	North East	Bauchi	Gombe	Reinforcement with 1 x 300MVA 330/132kV and 1x 100MVA 132/33kV Transformers with High Voltage Switchgears, and Associated equipment Bus with 3 No Additional Feeder Bays.
28	North Central	Bauchi	Jos TS	Reinforcement of 1x 300MVA 330/132/33kV & 1 x 100MVA Power Transformers, 330kV High Voltage Switchgears and Associated Equipment. Rehabilitation of Civil Structures of the Control Room and Digital Control System.
29	North East	Bauchi	Maiduguri	Reinforcement with 1Nos. 150MVA 330/132kV power Transformer, High Voltage Switchgears, and Associated Equipment with 3 No Additional Feeder Bays
30	North East	Bauchi	Bauchi	Upgrading of 22.5MVA and 30MVA Transformers to 2X 60MVA 132/33kV Transformers. Rehabilitation of Control Room with Digital Control System and Associated High Voltage Switchgears.
31	South West	Osogbo	Osogbo	Upgrading of 1x 90MVA with 1x300MVA 330/132kV and Reinforcement with 1x100MVA Power Transformers, High Voltage Switchgears and Associated Equipment and 75MX Reactor including the renovation of Control Room
32	South West	Osogbo	Ilorin	Reinforcement of 2 x100MVA 132/33kV Power Transformers, High Voltage Switchgears, and Associated Equipment. Construction of New Control Room with Digital Control System (DCS)
33	South West	Osogbo	Ondo	Upgrading of 2x 30MVA with 2x 60MVA, 132/33kV Power Transformer, Replacement of High Voltage Switchgears, Conversion of 6nos. 33kV Indoor to Outdoor. Rehabilitation of Control Room with Digital Control System, and Perimeter Fencing.
34	South South	Benin	Irrua	Supply and installation of 100MVA 132/33kV power Transformer and associated Switchgears.
35	South South	Benin	Delta IV TS	Reinforcement with 1 x 150MVA 330/132kV Interbus Transformer, 1 x 100MVA Power Transformer, High Voltage Switchgears, and Associated Equipment. Replacement of obsolete Control and Relay panels with digital Control System
36	South South	Benin	Effurun	Replacement of defective 1x 60MVA 132/33kV with a new 1x 100MVA, 132/33kV Power Transformer, High Voltage Switchgears, and Associated Equipment with 4 No Additional Feeder Bays
37	South South	Benin	Benin TS	Reinforcement with 1 x 150MVA 330/132kV and 100MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment. Replacement of obsolete Control and Relay panels with digital Control System
38	South West	Lagos	Ijora	Upgrading of 2 x 30MVA with 2 x 100MVA 132/33kV. Rehabilitation of Civil Structures of the Control Room and Digital Control System.
39	South West	Lagos	Lekki	Supply and installation of 1x 300MVA 330/132kV, 2 x 100MVA, 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.
40	South West	Lagos	Alagbon	Supply and Installation of 1x 300MVA 330/132kV, 2x 100MVA 132/33kV Power Transformers, Switchgears, Associated Equipment and Devices.

41	South West	Lagos	Alausa	Reinforcement of 1x 100MVA 132/33kV Power Transformer, High Voltage Switchgears and Associated Equipment.
42	South West	Lagos	Akoka	Complete Rehabilitation of the Gas Insulated Substation (GIS).
43	South West	Lagos	Amuwo Odofin	Complete Rehabilitation of the Gas Insulated Substation (GIS).
44	South West	Lagos	Ifire	Complete rehabilitation of the Gas Insulated Substation (GIS).
45	South West	Lagos	Otta TS	Upgrading the 1x 30MVA and 1x40MVA with 2x 100MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.
46	South West	Lagos	Maryland	Upgrading of 2 x 30MVA to 2 x 100MVA 132/33kV Power Transformers, High Voltage Switchgears and Associated Equipment.
47	South West	Lagos	Egbin	Replacement of obsolete Control and Relay panels with Digital Control System, Rehabilitation of Control Room, High Voltage Switchgears and Associated Equipment.
48	South West	Osogbo	Osogbo- Offa Ganmo - Ilorin	Reconductoring of 150km, 132kV Line Between Osogbo-Offa/Omuaran to Ganmo and Ilorin TS
49	South West	Osogbo	Ayede – shagamu	Reconstruction and Conversion to Double Circuit of Ayede -Shagamu 132kV Line (54km) and Creation of Additional Bays 132kV Line Bays at Ayede and Shagamu.
50	South West	Osogbo	Osogbo-lfe /Ilesha	Reconstruction and Conversion to Double Circuit of Osogbo-lfe/Ilesha 132kV Line (39.21 km) and Osogbo-Ilesha 132kV Line Tie-Off (22.1km) and Creation of Additional 132kV Line Bays at Osogbo and Ilesha.
51	South South	Port Harcourt	Afam- PH Main	Reconstruction of Existing Double 132kV Line Circuit to 4 x 132kV Line Circuit Using the Same Right of Way from Afam to Port Harcourt Main (37.8km), and Creating Additional 3 x 132kV Line Bays
52	South South	Port Harcourt	PH Main - PH Town	Reconductoring of 132kV Double Circuit of Port Harcourt Main to Port Harcourt Town 132kV Line (6km)
53	North West	Kaduna	kumbotso– Hadejia	Reconductoring of Kumbotsho- Hadejia 132kV Line (165km)
54	North West	Kaduna	kumbotso– Kankia	Reconductoring of Kumbotsho- Kankia 132kV Line (100km)
55	South East	Enugu	Onitsha - Oji River	Reconductoring of Onitsha- Oji 132kV Line (87km) with Turn In- Turn Out Tower at Nibo in Awka 132kV Substation.
56	South East	Enugu	Alaoji to Aba Town	Reconductoring of Alaoji - Aba Town Double Circuit 132kV line (8km) Including Rehabilitation of Two Nos. Towers along the Line.
57	South South	Benin	Irrua - Benin	Reconductoring of Irrua - Benin 132kV line (81km) with Turn In- Turn Out Tower at Nibo - Awka 132kV Substation.
58	South South	Benin	Irrua - Okpella	Reconductoring of Irrua- Okpella 132kV line (43km) with Turn In- Turn Out Tower at Nibo - Awka 132kV Substation.
59	South South	Benin	Okpella - Okene	Reconductoring of Okpella - Okene 132kV line (65km) with Turn In- Turn Out Tower at Nibo - Awka 132kV Substation.
60	South South	Benin	Ajaokuta- Okene	Reconductoring of Ajaokuta- Okene 132kV line (60km) with Turn In- Turn Out Tower at Nibo - Awka 132kV Substation.
61	North East	Bauchi	Gombe-Biu Damboa- Maiduguri	Reconductoring of the Entire Route Length from Gombe - Biu -Damboa - Maiduguri 132kV line of 356km Route Length
62	Supply of Power Equipment to Ojo			3 x 150MVA, 10 x100MVA, 10 x 60MVA and Earthing Transformers

· **Lagos/Ogun Transmission Project financed by Japanese International Corporation Agency JICA (\$200 million).** The project which was inherited from past management of TCN has been completely scoped, designed, with their EIA, RAP and ESMP completed. However, the compensation amount was very high, initially put at N8billion and later reduced to about N5billion. The Governor of Ogun State has been asked to assist with the compensation for the RoW for the Ogun/Lagos Transmission Project. Discussions on the compensation is being finalised with State Government and the final mission of JICA will take place in November 2018. This project will fund the construction of five (5) substations and associated 330kV and 132kV transmission lines in Ogun State (four 330kV and one 132kV substations). In Badagry, the fund would also finance a 132kV substation. Details of the project includes

S/N	REGION		LOCATION	DESCRIPTION
1	South West	Lagos	New Abeokuta	Arigbajo – NewAbeokuta132kV D/C Transmission Line (37.8km)
2	South West	Lagos	Arigbajo	Olorunsogo – Arigbajo330kV D/C Transmission Line (12.9km)
3	South West	Lagos	Ikeja West	Arigbajo – Ikeja West / Osogbo 330kV D/C Turn in-out (5.9km)
4	South West	Lagos	Arigbajo	Ogijo – Arigbajo D/C Transmission (43.7km) Line
5	South West	Lagos	Shagamu	132kV Quad Line (2.3km) from Ogijo – Existing Ikorodu/Shagamu 132 kV 2x D/C Transmission Line
6	South West	Lagos	Redeem	132kV D/C Transmission Line (10.3km) from Ogijo – Redeem.
7	South West	Lagos	Ikeja West	MFM – Existing Benin (Omotosho)/Ikeja-West 330kV 2 x D/C Transmission Line(4.2km)
8	South West	Lagos	New Agbara	Arigbajo – NewAgbara Transmission Line (30.6km) 330kV D/C
9	South West	Lagos	Agbara	New Agbara– Agbara Transmission Line (20.8km) 132kV D/C
10	South West	Lagos	Badagry	New Agbara – Badagry Transmission Line (34.2km) 132kV D/C
11	South West	Lagos	Ogijo	2x300MVA 330/132kV and 2 x100MVA 132/33kV Transformer capacity at Ogijo, Lagos
12	South West	Lagos	Redeem	2x60MVA, 132/33kV Substation at Redeem.
13	South West	Lagos	MFM	2x150MVA, 330/132kV and 2x100MVA 132/33kV Substation at MFM
14	South West	Lagos	New Agbara	2x150MVA, 330/132kV and 2x100MVA 132/33kV Substation at New Agbara
15	South West	Lagos	Badagry	2x60MVA, 132/33kV substation at Badagry.
16	South West	Lagos	Arigbajo	Installation of 2x150MVA 330/132/33kV Transformers with 6 bay extension and 2x60MVA 132/33kV transformers with 6 bay extension

· **Northern Corridor Transmission Project to be financed by French Development Agency and EU (\$245 million and €25 million).** The appraisal of this project was completed on September 28, 2018 and is expected to be approved by the Board of AFD and EU in November 2018. This project will build two new 330kV double circuit transmission lines; Kainji-BirninKebbi-Sokoto and Katsina-Daura-Gwiwa-Jogana-Kura lines. The project will also reconstruct one out of the two very old Shiroro-Kaduna 330kV single circuit line into a quad line, and build four (4) number 330kV substations in Sokoto, Daura, Jogana and Bauchi. Details of the project below:

S/N	REGION		SUBSTATION	DESCRIPTION
1	North West	SHIRORO	Kainji - Birnin Kebbi 330kV Double Circuit (DC) Line (310km)	330kV DC Transmission Line Kainji-Birnin Kebbi (following the existing ROW of the SC 330kV line) and 4x 330kV bay extension at B/ Kebbi and 2 x 330kV bay extension at Kainji
2	North West	SHIRORO	Birnin Kebbi-Sokoto 330kV Double Circuit (DC) Line (130km)	(1) Birnin Kebbi-Sokoto 330kV DC Transmission Line on the existing 132KV Birnin-Kebbi Sokoto ROW and reconductoring the existing 132kV Single circuit Birnin-Kebbi Line to double its capacity
3	North West	Kaduna	Katsina-Daura-Gwiwa-Minjibir-Kura (234KM)	Construction of length of 330kV DC Twin line between Katsina-Daura-Gwiwa-Jogana- Kura
4	North Central	SHIRORO	Lambata (Minna-Suleja Rd)	Turn in Turn out Minna - Suleja 132KV DC and Construction of 1 x 60MVA 132/33kV Complete substation
5	North West	SHIRORO	Fakon Sarki-Argungu	Turn in Turn Out on Brinin Kebbi-Sokoto 132KV Line and Construction of 2 x 60MVA 132/33kV complete substation
6	North West	SHIRORO	Yelwa- Yauri	Construction of 1 x 60MVA 132/33kV complete substation and High Voltage Switchgears and Associated Equipment.
7	North Central	SHIRORO	Birnin Gwari	Construction of 1 x 60MVA 132/33kV complete substation and High Voltage Switchgears and Associated Equipment.
8	North West	Kaduna	Daura-Katsina State	Installation of 2x150MVA 330/132/33KV Double Circuit Substation and with associated 132kv bay extension and Installation of 2x60MVA, 132/33kV transformers, 6no outgoing 33kV feeder bays
9	North West	Kaduna	Jogana-Kano	Installation of 2x150MVA 330/132/33KV Double Circuit Substation and with associated 132kv bay extension and Installation of 2x60MVA 132/33kV transformers, 6no outgoing 33kV feeder bays
10	North West	SHIRORO	330kV Sokoto Transmission Substation	Installation of 2x150MVA 330/132/33KV Transformers at Sokoto New 330 Double Circuit Substation and with associated 132kv bay extension and Installation of 2x60MVA 132/33kV transformers, 6no outgoing 33kV feeder bays

11	North Central	SHIRORO	Shiroro –Kaduna (Mando) 330kV Lines 1 &2 SC Transmission Lines (96km)	Reconstruction and upgrading of 2 Single Circuit 330kV Transmission Lines 1 &2 from Shiroro PS to Mando (Kaduna) to a 2 Double Circuit, Quad conductor Shiroro-Mando (Kaduna) Transmission lines 1 and 2. The line bay extension at Mando and Shiroro
12	NORTH EAST	BAUCHI	Bauchi 330kV Transmission Substation (2km)	Turn in-out of the existing 330kV SC Jos Gombe line at Bauchi, and installation of 2x150MVA 330/132/33kV Transformers with associated 132kV bay extension and 2x60MVA 132/33kV transformers, 6no outgoing 33kV feeder bays
13	North Central	SHIRORO	Rehabilitation work at Kainji TS	Urgent Replacement of Kainji/Jebba 330kV line 1 - 330kV Circuit Breaker at Kainji TS.
14	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacing the existing very old (1968) Marilli 80MVA 330/132/13.8kV, 2T1 transformer with 1x150MVA 330/132/33kV plus 1X60MVA, 132/33kV transformer and 3 number 33KV Feeder Control and protection panels.
15	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Urgent Replacement of 1nos. Jebba T/S 75MX reactor 2R2 CB - that exploded.
16	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacement of 11nos. 330KV Circuit Breakers at Jebba 330kV Switchyard. The existing CB's are obsolete, no parts and spares available.
17	North Central	SHIRORO	Rehabilitation Work at Jebba TS	Replacement of 9 spans of Sky wire for 330kV Jebba- Osogbo lines 1 &2 and 330kV Jebba Ganmo line
18	North Central	SHIRORO	Rehabilitation work at Jebba Power Station Transmission Switch yard.	Replacement of 8nos. 330KV obsolete Circuit Breakers. The existing CB's are obsolete, no parts and spares available.
19	North Central	SHIRORO	Rehabilitation work at Shiroro TS	Replacement of 330KV obsolete hydraulic SF6, Circuit Breakers and associated motorized Isolators at Shiroro TS
20	North Central	SHIRORO	Rehabilitation work at Shiroro TS	Replacement of 28 spans of Sky wire for 330kV 330kV Shiroro- Jebba line 2
21	North Central	SHIRORO	Rehabilitation work at Minna TS	Reinforcement of Minna with 1x60MVA 132/33kV Transformer to relieve the existing overloaded 1x30MVA 132/33kV Transformer
22	North Central	SHIRORO	Rehabilitation work at Minna TS	Replacement of 32 spans of Sky wire for 132kV Minna- Bida line
23	North Central	SHIRORO	Karu -Keffi - Akwanga 132kV Transmission line (103km)	Reconductoring of 132kV SC Karu -Keffi Akwanga transmission Line
24	North Central	SHIRORO	Keffi TS Transmission Line Rehabilitation	Replacement of 36 spans of Sky wire for 132kV Apo- Keffi line

· ***Nigeria Transmission Expansion project will be financed by the African Development Bank (\$410 million).*** The project will reconstruct the Alaoji-Owerri-Onitsha 330 SC Line and Ughelli-Benin 330kV line into quad lines and construct a 330kV quad line between Kaduna (Mando) to Kano (Kumbotso). The project will also fund several 132kV transmission lines in Borno, Adamawa and Yobe States. Also, to be executed under the project are two (2) number 330kV substations at the Millennium City-Kaduna and Zaria. Details of the project are as follows:

NIGERIA TRANSMISSION EXPANSION PROJECTS (TCN- AfDB Project)				
	REGION		SUBSTATION	DESCRIPTION
1	North West	Kaduna	Construction of 330KV Quad Line on Kaduna-Kano 330KV DC Transmission Line (212KM)	Construction of Double Circuit 330kV Quad Conductor Kaduna-Kano Transmission line.
2	North West	Kaduna	Zaria	Turn-in Turn-out and Installation of 2x150MVA, 330/132/33kV Transformers, 6x330kV bay extension, 2x60MVA 132/33kV Transformers, associated 132kV line bays and 6NO 33kV feeder bays at Zaria
3	North West	Kaduna	Rigasa town, Kaduna	Turn-in Turn-out and Installation of 2x60MVA 132/33kV Transformer and 5NO outgoing 33kV feeders
4	North West	Kaduna	Jaji, Kaduna	Turn-in Turn-out and installation of 2x60MVA 132/33kV Transformers and 6 number outgoing 33kV feeders
5	North West	Kaduna	Millennium City Kaduna	Turn-in Turn-Out and installation of 2x150MVA 330/132/33kV Transformers, 2 x330kV bay extension, 2x60MVA 132/33kV Transformers and 2x3NO associated outgoing 33kV feeders.
6	South South	Benin	Reconstruction of Delta-Benin 330kV Transmission Line	Reconstruction of one Delta-Benin 330kV Double Circuit Transmission Line into Quad
7	South South	Port Harcourt	Delta to Benin 330kV Transmission Line Reconstruction of Alaoji - Onitsha 330kV Transmission Line(138KM)	Construction of 330kV Double Circuit Alaoji-Ihiala-Onitsha 330kV Transmission Line into Quad
8	South South	Ahoda, Gilli Gilli and Sapele	Environmental Impact Assessment and Resettlement Action	Double Circuit(DC) 132kV Ahoda-Gilli-Gilli DC Transmission Line and 2x60MVA 132/33kV Transformers at Gilli Gilli plus associated 6 number outgoing 33kV feeders and 132kV Sapele - Odilli Transmission Line also 2x60MVA 132/33kV Transformers at Gilli Gilli plus associated 6 number outgoing 33kV feeders

9	North East	Bauchi	Plan and Payment of Environmental Impact Assessment and Resettlement Action Plan and Payment of Compensation	132kV transmission line and associated substations: Maiduguri-Manguno-Marte-Dikwa-Bama; Maiduguri-Bama-Gwoza; Hadeja-Nguru-Gashua-Damaturu; Biu-Miringa-Buni Yadi-Damaturu; Dambua-Chibok-Askira-Uba-Mubi; Mayo Belwa-Jada-Ganye
10	North East	Bauchi	Manguno	Construction of 2 x 60MVA 132/33kV new substation including 2 x 132kV line bay extension at Old Maiduguri 132/33kV Substation.
11	North East	Bauchi	Marte	Construction of 2 x 60MVA 132/33kV complete substation
12	North East	Bauchi	Dikwa	Construction of 1 x 60MVA 132/33kV complete substation
13	North East	Bauchi	Bama	Construction of 2 x 60MVA 132/33kV complete substation including 2 x 132kV Line Bay Extension at New Maiduguri 330/132kV Substation.
14	North East	Bauchi	Gwoza	Construction of 1 x 60MVA 132/33kV Complete substation including 2 x 132kV line bay extension at Gulak132/33kV Substation.
15	North East	Bauchi	Jada	Construction of 2 x 60MVA 132/33kV Complete substation including 2 x 132kV Line Bay Extension at Mayo Belwa 330/132kV Substation.
16	North East	Bauchi	Ganye	Construction of 2 x 60MVA 132/33kV complete substation including 2 x 132kV line bay extension at Mayo Belwa 330/132kV Substation.
17	North East	Bauchi	Uba	Construction of 2 x 60MVA 132/33kV complete substation including 2 x 132kV line bay extension at Mubi 132/332kV Substation.
18	North East	Bauchi	Chibok	Construction of 1 x 60MVA 132/33kV complete substation
19	North East	Bauchi	Biu	Construction of 1x 60MVA 132/33kV complete substation including 2 x 132kV line bay extension at Biu 132/33kV Substation.
20	North East	Bauchi	Buni Yadi	Construction of 1 x 60MVA 132/33kV complete substation including 2 x 132kV line bay extension each at Damaturu 330kV Substation and Biu 132/33kV Substation respectively
21	North East	Bauchi	Kwaya Kusar	Construction of 2 x 60MVA 132/33kV complete substation including 2 x 132kV line bay extension each at Damaturu 330kV Substation and Biu 132/33kV Substation respectively

22	North East	Bauchi	Maiduguri - Manguno - Marte - Dikwa - Bama	Construction of a New 321km, 132kV double circuit line between Maiduguri - Manguno - Marte - Dikwa -Bama
23	North East	Bauchi	Maiduguri - Bama - Gwoza - Gulak	Construction of a New 165km, 132kV double circuit line from Maiduguri - Bama - Goza - Gulak
24	North East	Bauchi	Mayo Belwa - Jada - Ganye	Construction of a New 78km, 132kV double circuit line from Mayo Belwa - Jada - Ganye.
25	North East	Bauchi	Biu - BuniYadi - Damaturu	Construction of a New 134km, 132kV double circuit line from Biu - BuniYadi - Damaturu
26	North East	Bauchi	Dambua - Chibok - Uba - Mubi	Construction of a New 130km, 132kV double circuit line from Dambua - Chibok - Uba - Mubi

▲ Consultancies

a) *Revalidation of TCN's Organizational Structure Consultancy*

Given the significant increase in the number of Management staff of TCN, the Government mandated the new Management to propose a structure that is consistent with the goal of government to improve the performance of TCN. A proposal was made in conjunction with Messrs H. Pierson that validated the new management structure. The report was concluded and submitted for approval late last year. Staff record review was also carried out within the period under review. This revealed some level of discrepancies in the record of several staff. The discrepancies discovered, helped strengthen the management of records and has also afforded Management the opportunity to correct them.

b) *Transparency and Accountability*

The first task the new management undertook in 2017 to properly position TCN, was the audit of TCN. Fortunately, PWC had already been hired to audit TCN. Management worked tirelessly and by June 2017, TCN delivered 2012-2014 and 2015 Audited Financial Statements of TCN. TCN also carried out a specialised audit of Market Operator for 2015-2016, which revealed significant infractions in the way MO was managed. This led to the reorganization currently being implemented in MO by Management.

TCN quickly carried out the re-organization of the Procurement Department which led to the transfer of the former GM (T) Port Harcourt to the Headquarters as the new

General Manager (Procurement). The two PMUs that manage the World Bank and French Development Agency projects were also reorganised and four new PMUs created. All the key staff of the PMUs were selected competitively.

The Management also reviewed and increased the qualification criteria for the participation of vendors in TCN.

c) 20 Years Least Cost Transmission Expansion Plan

The 20 Years Least Cost Transmission Expansion Master Plan was completed when Mr. Mohammed took over the leadership of TCN. The Transmission Rehabilitation and Expansion Program has also been prepared in line with the 20 Years Least Cost Transmission Master Plan prepared by Messrs Fitchner of Germany. The study reviewed transmission expansion at various voltage levels, 330kV, 500kV and 750kV (Super Grid), and the conclusion was that given the level of development of Nigeria, it is more economical at this stage to continue to expand the Grid at 330kV. TCN has since accepted the report and put it into use. While TCN will expand at 330KV now, it has stopped the use of 330kV single circuit transmission lines and has in addition introduced 330kV Quad Line for the first time. The use of super thermal resistant alloy (GzTACSR) conductor capable of carrying double the existing conductor capacity has also been introduced.



Honourable Minister of Power Works and Housing Mr. Babatunde Raji Fashola Receiving 20Years Least Cost Expansion Plan from MD of TCN UG Mohammed

d) TCN management also engaged Messrs QUEBAN as the Tax consultant to review the taxation of TCN. They commenced the assignment in February 2018. The recruitment of Messrs QUEBAN was timely especially with the allegation by FIRS that TCN owed a total sum of N30 Billion.

e) ***Consultancy for Closing the 330kV Loop Supply to Lagos Island and Supply to Eko Atlantic through underground cable system.*** Procurement process for the projects are at various stages. While supply to Eko Atlantic study is currently being evaluated, the closing of the 330kV loop which will involve the construction of a 330kV double circuit line from Akangba through Ijora to Alagbon; (a multi circuit tower will be constructed to carry both 330kV and 132kV lines up to where the current 132kV line diverts to Akoka). The request for proposal (RFP) for this project has been submitted to the World Bank for No Objection.

▲ ***Re-introduction of Pupillage Training by TCN***

Under the new leadership, TCN re-introduced pupillage training program wherein new engineers will work under the tutelage of senior engineers for a period of one year before they can start working independently. The pupillage existed in NEPA/ PHCN and was for a period of two years. However, since generation and distribution have been separated from transmission, this practice stopped. Due to its importance, a committee was established by the new Management to review the possibility of re-introducing pupillage and the committee suggested that this should be reduced to one year as new engineers will only be restricted to tutelage in transmission. The re-introduction of pupillage does not in any way negate the capacity development goal of NAPTIN, but would ensure that new engineers get the necessary practical experience before they are exposed to the hazards of high voltage network.

▲ ***Improvement in the Performance of WAPP***

WAPP, under the Chairmanship of the MD/CEO of TCN, witnessed tremendous improvement in its activities. Under the leadership of Mohammed, the issues that militated against the conclusion of the North Core Project were resolved. This was done through a visit by the Managing Director of TCN to Niger and Burkina Faso in December 2017. The 330kV Median Backbone attracted the interest of both Ghana and Cote D' Voire. The new 330kV DC will now start from Shiroro through Zungeru, Kainji, Parakuo,



UG Mohammed signing MOU with AGIP with Vice Chairman/CEO on the right and Company Secretary of TCN on the left.

Northern Togo, Ghana, and end in Cote D' Voire. Studies have also been intensified on the 2nd Coastal backbone (new 330kV DC from Nigeria to Benin) and it is about to be concluded. WAPP, in conjunction with ERERA, have launched the commencement of the 1st part of the West African Power Market in June, 2018.

▲ **Increase in Collaborations with Other Organizations**

· State Governments

Given the difficulties in securing Right of Way (ROW) for the expansion of its transmission network which is 25 Meters on both sides for 330kV high voltage lines and 15 Meters on both sides for 132kV high voltage lines. TCN under the current management devised a strategy of collaborating with state governments especially on RoW issues. TCN is currently collaborating with Edo, Kaduna, Ogun, Lagos, Kano, Abia, Ondo, Kebbi, Katsina, Yobe and Borno State Governments. Under similar arrangement, TCN entered into agreement with Enugu State Government under which the 132kV substation completed by NDPHC over four years ago was energised in two months, after conducting a 5KM T-off from the New Haven-Oturkpo 132kV line (Enugu State Government secured the RoW and also demolished structures on the RoW, while TCN did the electro-mechanical work).

TCN is also collaborating with several state governments on substation projects including Bauchi State (Jama'are, Alkaleri and Toro), Akwa Ibom (Ekim), Kebbi State (Yauri) and Delta State (Kwale).

- TCN is equally collaborating with AGIP/ NNPC JV on the Okpai Phase 2. Under the agreement, the JV will help TCN sand fill two towers on the Okpai-Onitsha 330kV DC line which are currently being eroded in River Niger. The JV is also supporting TCN with GIS and sand filling, access road to the location 330/132kV and 132/33kV substations in Okpai and Kwale respectively.

- TCN has intensified collaboration with JICA under which capacitor banks worth over \$13 million were completed and commissioned at Apo, Abuja and Keffi in Nassarawa State, as Grant to the Federal Government of Nigeria by the people and Government of Japan. Under similar arrangement, JICA is upgrading and modernizing the Apapa GIS Substation from 90MVA to 160MVA and rehabilitating Akangba 330kV Substation. Discussions on the rehabilitation of Isolo, Ikeja West and Ojo Substations by JICA under similar grant arrangement has commenced.

- TCN under the new leadership paid outstanding annual membership fees to APUA in the sum of US\$25,000. 00. This afforded TCN the opportunity to benefit from the programmes of APUA and its partners. APUA got support from African Development Bank to train member utilities staff: 310 TCN engineers benefited from the training. The training was performed by National Power Training Institute (NAPTIN) in the 3rd and 4th quarters of 2017.

▲ **Visit to Regions**

MD/CEO has visited all the nine regional offices and 80% of the sub-regions and works centres in the first of year of office to personally assess installations in the substations.

▲ **TCN Staff Voluntarily Created a Fitness Club**

TCN Fitness Club has become a reality. At least 30 Staff attend the Saturday Morning Jogging and other fitness exercises regularly. The motivation for the creation of TCN Fitness Club came from a presentation by the MD when he showed staff pictures of himself before and after he started regular exercise during one of the town hall meetings. According to him, anyone that wants to be fit must make a habit of exercising between 6am and 7pm every day.



TCN Fitness Club

Don't wish it was easier,
wish you were better.
Don't wish for less problems,
wish for more skills.
Don't wish for less challenge,
wish for more wisdom.

....*Jim Rohn*

TCN's MILESTONE S

▶ FEB 2017 - SEPT 2018



