

NEWSLETTER

TRANSMISSION COMPANY OF NIGERIA (TCN)



- **WAPP EMBARKS ON EXECUTION OF CRITICAL TRX INFRASTRUCTURE TO ENHANCE REGIONAL ELECTRICITY TRADE**
- **TCN SEEKS COLLABORATION WITH NASSARAWA STATE GOVT**
- **KANO STATE GOVT SIGN MoU WITH TCN TO FACILITATE EXECUTION OF TRX PROJECTS**
- **TCN SEEKS NERC APPROVAL FOR REVIEW OF ANCILLARY SERVICE CHARGE**

TCN SEEKS NERC APPROVAL FOR REVIEW OF ANCILLARY SERVICE CHARGE

By Eric Ephraim Ene



NERC Commissioners at the hearing

the role of the System Operator (SO) to control the grid. The SO is mandated to harmonize, coordinate and optimize effective operation of the grid to maintain stability, safety and reliability even as it carries out security constrained economic dispatch.

He explained that ancillary services are employed by the System Operator to smoothen grid operation by providing Voltage Regulation, Black –Start and Operating Reserve which comprise the Primary and Secondary Reserves.

TCN has made a case at NERC's public hearing, for the Review of Ancillary Service Charge from the present rate of N0.56/Kwh to N0.75/Kwh to enable it procure 260MW Secondary Reserve including black-start for grid security, stability and reliability in the Nigerian Electricity Supply Industry (NESI).

The Market Operator, Engr. Edmund Eje justified the need for the review of Ancillary Service Charge during a presentation on behalf of TCN at the Public Hearing on Extraordinary Tariff For Ancilliary Services, organized by NERC, on Monday, 16th March, 2020, at NERC headquarters, Abuja.

Engr. Eje stated that the provision of adequate tariff for Ancillary Service will enable the Nigerian Electricity Market (NEM) achieve system security, safety and reliability, reduce the risk of system collapse, make restoration of supply easy while at the same time mitigate damages to generation turbine blades. He noted that the review would be beneficial as it would reduce outage hours for distribution, transmission and generating equipment, ensure the integrity of NEM, ensure that the Discos serve their customers more reliably as well as enhance market liquidity and power quality.

According to him, in line with the Grid Code, it is

Engr. Eje noted that the Primary Reserve is represented by the Free Governor Mode of Operation which is mandatory for Generators connected to the grid. It is a Grid Code compliance requirement that all on-grid generators provide the Primary Reserve by synchronizing with the automatic load ramp down according to their capacities. The Primary Reserve, he said, is not paid for unlike the Secondary Reserve.

He further explained that the Secondary Reserve, which is the Spinning Reserve, comes into play when Power Demand is higher than supply during contingency situations. It is a supply that is paid for by the market. Any generator with the capability is engaged through a Spinning Reserve Purchase Agreement.

He noted that the system has largely achieved Primary Reserve through the enforcement of Free Governor Mode of Operation and that the absence of Spinning Reserve or the Secondary Reserve was responsible for the unabated frequency roaming and instability being experienced in the system.

In further advancing the justification for the review, Engr. Eje said that the only ancillary

service presently being paid for by the Market Operator is for Black – Start since 2015. He explained that if approved by the Regulator, the provision of the procured Spinning Reserve would be reviewed every six months, taking into consideration the progress it has made in power grid stability.

Speaking also in support of the review of Ancillary Services Charge, the Managing Director and Chief Executive Officer of TCN, Mr Usman Gur Mohammed said the request for the provision of Spinning Reserve on the national power grid was to complement the Primary Reserve for an improved system stability.

Mr. Mohammed assured stakeholders that TCN will adequately deploy the Spinning Reserve for the overall success of the Nation's grid as soon as NERC grants approval. Generating companies, he noted, have not been willing to provide this service because the task was not incentivised.

The Chairman of the three-man Tariff Review Panel and the Vice Chairman of NERC, Engineer



Market Operator, Engr. Edmund Eje, during his presentation

Sanusi Garba said the hearing was to allow stakeholders understand the justification for providing the Spinning Reserve, noting that the Commission will take a decision on the presentation by the Market Operator.



Cross section of Participants

WAPP EMBARKS ON EXECUTION OF CRITICAL TRANSMISSION INFRASTRUCTURE TO ENHANCE REGIONAL ELECTRICITY TRADE

Eric Ephraim Ene



The Director of the North Core Project, one of the priority project of the West African Power Pool (WAPP), Engr. Mailele Djibril, in this interview, speaks on the implementation process so far and how the project will connect Nigeria and three countries up to the Republic of Burkina Faso with critical transmission infrastructure to enhance regional electricity trade. Excerpt;

NORTH CORE PROJECT IS ONE OF THE PRIORITY CORE PROJECTS OF WAPP INVESTMENT MASTER PLAN, WHAT DOES IT AIM TO ACHIEVE?

The ECOWAS member countries, through the West African Power Pool (WAPP) are setting up a large electricity market to allow reliable and affordable electricity supply to citizens. This however needs infrastructures that was captured inside a unified investment Master Plan comprising:

- Electricity generation facilities where affordable
- Transmission facilities (lines and substations) to interconnect Grids/Networks and allow energy exchange
- IT platform for Energy Trading being implemented at Cotonou (WAPP-ICC)

In the framework of interconnecting Grids, many projects were identified to be priority project since they should allow energy to be traded among ECOWAS member countries:

- COASTAL BACKBONE (Cote d'Ivoire – Ghana – Benin/Togo – Nigeria)

- INTERZONAL HUB (Ghana – Burkina Faso – Mali)
- OMVG – OMVS (Guinea – Guinea Bissau – The Gambia – Senegal – Mali – Mauritania)
- CLSG (Cote d'Ivoire – Liberia – Siera Leone – Guinea) NORTH CORE (Nigeria – Niger – Benin/Togo – Burkina Faso) is the last link that should allow the minimum required interconnectivity to exchange energy among West Africa Countries.

WHAT IS THE SCOPE OF THE PROJECT, ESPECIALLY AS IT CONCERNS TRANSMISSION INFRASTRUCTURE ACROSS BENEFITING COUNTRIES?

The infrastructure mainly comprises 875km of 330kV double circuit transmission lines from Birnin Kebbi (Nigeria) all the way to Ouagadougou (Burkina Faso) through Zabori (Niger) and Gorou Banda (Niger) and from Zabori (Niger) to Malanville (Benin). In addition, we have 24km of 225kV transmission lines in Burkina Faso to loop the grid inside Ouagadougou town. Five substations (Zabori

The project also has a rural electrification component to provide electricity to communities along the 330 kV lines, within a radius of 5 km, in Burkina Faso and Niger, being implemented by respective utilities, SONABEL and NIGELEC.

HOW WOULD THIS AFFECT COMMUNITIES ALONG THE LINE ROUTE IN TERMS OF RIGHT OF WAY AND ENVIRONMENTAL IMPACT ASSESSEMENT?

The project has affected all the community settlements, lands and livelihoods in the 50m line route. Therefore, Resettlement Action Plans are designed to mitigate the specific social impacts in all the participants countries.

In the same way, the environmental impact assessment (EIA) of the project have identified adverse environmental, health and security impacts that are being addressed by specific Environmental and Social Management Plans (ESMP) in each country.

THE NORTH CORE PROJECT WAS RECENTLY LAUNCHED DURING THE 14TH SESSION OF WAPP GENERAL ASSEMBLY, WHAT IS THE TIMELINE FOR THE COMPLETION OF THE PROJECT?

We officially launched the project on 7th of November 2019. We are under the process of procurement which started with pre-qualification. We expect to finalize this procurement process in other to allow the contractors start work towards end of this year. The works are estimated to last 30 months, meaning 2 years and half. And we expect to

commission the project in the second quarter of 2023.

WHO ARE THE TECHNICAL AND FINANCIAL PARTNERS OF THE TOTAL COST OF THE PROJECT?

The total cost of the project sums up to 567.5 million USD for the regional part and it is funded by the Federal Government of Nigeria is contributing to the level of 0.9 per cent, Agence Francaise de Developpement (AFD) is contributing 6 per cent, African Development Bank is contributing 20.5% and World Bank is contributing 72.6 per cent. In addition, European Union contributed for the Rural Electrification component of the project. It should be noted that the feasibility studies of this project was funded by NEPAD IPPF.



Director, (North Core Project), Engr. Mailele Djbril

HOW WOULD THIS PROJECT IMPACT ON THE WEST AFRICAN ELECTRICITY MARKET?

As I was saying, it is the last link that will allow the interconnectivity of the country's networks and facilitate electricity trade in the region. It is expected to have above 600MW flow, from countries with available generation capacity, mainly Nigeria, which will allow increase revenue in the sector. The off-taking countries that are identified to be Burkina Faso, Niger, Benin and Togo will enjoy electricity supply at lower cost. As soon as the infrastructure is in place, we can exchange energy from everywhere and this, in addition, could give incentive for private generation investors to come in the market. It should also be noted that rural electrification will significantly increase electricity access to the communities along the line.

The heaviest burdens
that we carry
are the thoughts
in our head.



TCN AND KANO STATE GOVT SIGN MoU TO FACILITATE EXECUTION OF CRITICAL TRANSMISSION PROJECTS IN THE STATE

By Kazah Bili Akau

The Transmission Company of Nigeria has signed a Memorandum of Understanding (MoU) with the government of Kano State on the construction of a 132kV double circuit transmission line from Daura to Babura through Kazaure and Danbatta, a 2x60MVA, 132/33kV substation each at Kazaure and Babura and a 2x60MVA 132/33kV substation at Mashi with turn-in and turn-out on Katsina -Daura 132kV line at Mashi.

The Managing Director/CEO of TCN, Usman Gur Mohammed, who led the management team of the company to the Kano State Liaison Office in Abuja for the signing ceremony, explained that the project is critical for voltage and power stability and that Jigawa and Katsina States have already signed their parts of the agreement.

The Governor of Kano State, His Excellency, Abdulahi Umar Ganduje, OFR, while delivering his welcome address expressed delight with the initiative and declared his commitment to work in collaboration with Jigawa and Katsina States to facilitate the successful implementation of the transmission line and substation projects.

Ganduje assured TCN of securing the Right-of-Way (RoW) for the transmission project and affirmed that his administration is working assiduously to regain the states lost glory in commerce.



TCN SEEKS COLLABORATION WITH NASARAWA STATE GOVERNMENT ON RoW FOR TRANSMISSION PROJECT

The Management of Transmission Company of Nigeria (TCN) has requested collaboration with the Nasarawa State government to procure the Right of Way (RoW) for the building of 132kV transmission line between Akwanga to Lafia and land for the construction of a 132kV substation in Lafia, the state capital.

The Managing Director and Chief Executive Officer of Transmission Company of Nigeria (TCN), Mr. Usman Gur Mohammed made this known when he led the management team on a courtesy visit to the Executive Governor of Nasarawa State, Alhaji Abdullahi Sule recently in Abuja.

Mr. Mohammed stated that the Akwanga –Lafia 132kV transmission line is being financed with public budget which has delayed its execution, hence the need for collaboration with the government of Nasarawa State to finance the RoW, while TCN constructs the

132kV Abaji - Toto- Nasarawa – Keffi double circuit transmission line and substation.

He informed the governor that TCN will reconductor the existing Karu-Keffi 132kV Single Circuit Transmission Line with high capacity conductors to increase its capacity and enable it transmit more electricity. The project, he said, was being financed by the French Development Agency (AFD). Existing transmission assets in the state are the Keffi-Akwanga 132kV transmission line with a 132/33kV Substation at Akwanga and other at Keffi. The Keffi Substation was upgraded with an additional 60MVA transformer. The upgrade was financed by the World Bank.

Mr. Mohammed also said that the Akwanga-Lafia, Double Circuit Transmission line was initially conceived to supply Lafia from Akwanga, but was changed to supply Akwanga from Lafia, providing redundancy for Akwanga as it

would receive supply from both Lafia and Abuja. The line would also provide a little flexibility for Lafia.

On the proposed Lafia - Abuja 330kV Double Circuit Transmission line which is part of the Abuja Ring project funded by AFD, Mr Mohammed said that the project when completed, would provide redundancy for Lafia as Lafia would receive power supply from two lines – the Jos / Markurdi Transmission line and the from Abuja/Lafia 330kV transmission line.

Responding, the Executive Governor of Nasarawa State, Alhaji Abdullahi Sule promised to work with TCN to ensure that the project is successfully executed for the benefit of his people. The governor also requested that the TCN team and his, keep meeting to continue to explore other areas of collaboration to improve power sector in the state.

People think being alone
makes you lonely

Being surrounded by
the wrong people is the
loneliest thing in the world.

TCN COMMEND UKNIAF ON CAPACITY BUILDING FOR STAFF ON PROJECT IMPLEMENTATION

By Eric Ene Ephraim



Cross section of participants nta at the meeting

The Management of Transmission Company of Nigeria (TCN) has commended the United Kingdom Nigeria Infrastructure Advisory Facility (UKNIAF) for assisting in capacity building of TCN staff especially at its regional offices nationwide.

The Managing Director and Chief Executive Officer of TCN, Mr. Usman Gur Mohammed, gave the commendation when the UKNIAF team visited TCN management recently, at its corporate headquarters, Abuja.

Mr. Mohammed expressed appreciation at the effort of the UKNIAF to assist in capacity development, saying that a well executed capacity development plan would boost staff ability to actively participate in accomplishing the ongoing Transmission Rehabilitation and Expansion Programme (TREP), noting that TCN will continue to maintain good working relationship with UKNIAF.

According to him, when TCN wanted to decentralize the Project Management to make it more efficient as well as empower the regional offices to participate actively in project execution, there were opposition even though central supervision of projects was not effective. Management however went ahead to decentralize project management for proper oversight. UKNIAF on its part promptly agreed to partner with TCN in ensuring that TCN's capacity growth plan becomes a reality especially for staff at the regional offices for project

implementation.

Mr. Mohammed recalled that, since 2017, when the present management took over, TCN has undergone some level of transformation which had moved it away from being the weakest in the Nigerian electricity value chain to becoming one of the strongest in the sector. He noted that TCN has empowered its engineers to take up responsibilities they were not doing before, such as the installation of power transformers at the substations,

reconductoring Double Circuit (DC) lines, live line repairs, building of entire substation such as the new Ilashe Substation in Lagos State among others.

According to Mr Mohammed, TCN has installed over 68 power transformers in its network between 2017 to date. Between January and February this year alone, TCN engineers have installed 7No power transformers, one of which was a 300MVA installed in Asaba, Delta State, he said.

The MD/CEO TCN, informed the visitors of TCN's desire to put in place a functional SCADA for grid stability and reliability before the eventual splitting of the company into Transmission Service Provider (TSP) and Independent System Operations. "We are working to make sure the system works because TSP and ISO must be separated and the most important separating factor is the SCADA, we are therefore treating the procurement of efficient SCADA as top priority", he said.

In his remarks, the Project Director, UKNIAF, Mr. Thomas assured TCN management of their support and cooperation in helping TCN achieve its desired objectives. According to him, "We are here formally to let TCN team know that UKNIAF is fully determined and willing to work and cooperate with TCN in the transformation and expansion of her operational processes."

TCN Sensitises Staff on CoVid-19 Virus

By Joy Egbase



(Right), AGM (Medicals), Dr. Mrs Edet Ademiluyi

The management of Transmission Company of Nigeria (TCN), has organized a oneday enlightenment lecture to sensitise staff on the outbreak of coronavirus around the world.

The assistant General Manager (Medical) Dr Mrs Edet Ademiluyi in her presentation urged staff to ensure adequate precautions and good hygiene as part of measures to protect themselves against the outbreak of the virus also known as COVID-19.

According to her, statistics showed that about 93,183 persons have been infected across the world with 3,203 dead so far recorded since the virus broke out in China late last year.

She stated that though the global community is still learning more about COVID-19, there was need for staff to pay attention to the symptoms of

the disease “Fever, cough, runny nose, sore throat and trouble breathing are some of the most common symptoms of the novel coronavirus” she said.

Dr Ademiluyi mentioned prevention of the virus to include; personal hygiene, Respiratory hygiene, Environmental hygiene, Social distancing and boosting immune system.

She appealed to staff to wash their hands often with soap and running water for at least 20 seconds, use an alcohol-based hand sanitizer with at least 60 percent alcohol if water and soap are not available, and avoid close contact with people who are sick, take some time to rest and avoid touching their eyes, nose and mouth.

“Cover your cough or sneeze with a tissue, then throw the tissue in the trash, and wash your hands. Clean and disinfect frequently touched objects and surfaces and stay home if you are sick.” she said.

The MD/CEO TCN, Usman Gur Mohammed lauded the initiative by the Medical Services team in sensitizing the staff on the outbreak of the virus in which he described as real. He noted, “one way we all can fight the virus is by eating healthy and being physically fit.

He used the occasion to appeal to staff not to abuse the use of hand sanitizer as anyone caught in the act will be sanctioned.



TCN APPEALS FOR ATTITUDINAL CHANGES AMONG STAKEHOLDERS IN POWER SECTOR

By Omideji Oluwakayode



GM (System Operation), TCN, Engr. Mrs. Nafisat Ali, addressing stakeholders at the meeting

The General Manager (System Operation), of Transmission Company of Nigeria (TCN), Engr. Mrs. Nafisat Ali, has appealed for attitudinal changes among stakeholders in the Nigeria electricity value chain in order to make the supply of electricity to Nigerians seamless.

Engr. Nafisat made the appeal in her address during the Bi-annual joint Generation, Operation, Distribution Planning meeting hosted recently in Osogbo, the Osun State capital by the Independent System Operations (ISO), a subsector of TCN.

According to her, the meeting was put in place to address operational issues as it affect the supply of electricity in the country in order to evaluate and make recommendations that will move the sector forward.

She decried the attitude of some distribution companies (DisCos) towards the attendance of the meetings where far reaching decisions are taken for the interest of the sector. According to her, “this is not an attack, it's an appeal to all of us, it's about our country. Last year, when this meeting took place in Benin City, only few Discos

attended. We need an attitudinal change. We need to keep communicating and discussing issues affecting our operations and take decisions that would improve the sector”, she said.

Engr. Ali, further appealed to the participants to be ready to implement decisions and recommendations reached at the end of the interface meeting for the needed change in the industry. She noted that stakeholders must be committed to cater for the electricity needs of the country as the amount of power generation capacity without utilization would amount to nothing. She urged stakeholders to wake up to their responsibilities and provide the needed power supply to Nigerians.

In his address, the General Manager, National Control Centre (NCC), Osogbo, Engr. Kingsley Osuoha, appealed to participants not to make the meeting a talking platform, where decisions and recommendations reached are not implemented. According to him, the challenges in the sector are surmountable and that formed the basis for bringing together stakeholders in the nation's electricity value chain to tackle operational issues.



Group photograph of participants at the meeting

ACCOMPLISHMENTS

Highlights of some works by TCN engineers as the company continues to rehabilitate and expand the grid

- i. Commissioning of 300MVA, 330/132/33kV capacity power transformer at Asaba T/S
- ii. Commissioning of 100MVA, 132/33kV power transformer at Ogba T/S
- ii. Commissioning of 60MVA, 132/33kV power transformer at Gusau T/S
- ii. Commissioning of 30MVA, 132/33kV power transformer at Egbin T/S
- ii. Commissioning of 45MVA, 132/33kV power transformer at Apapa T/S
- i. Pre-Commissioning test on 132kV Benin/Irrua newly installed Sf6 gas circuit breaker at Benin T/S
- ii. Pre-Commissioning test of 75MX 330kV, 6R1 Shunt reactor at Benin T/S
- iii. Installation of new 330kV Circuit Breaker Crompton Greaves on CB5 bay at Delta
- iv. Replacement of HV bushing of Earthing Transformer on T1A 40MVA Transformer at Agu-Awka T/S
- v. Installation and wiring of 500kVA Earthing Transformer at Nibo T/S
- vi. Installation of new 33kV Circuit Breaker Wukari feeder at Yandev T/S
- vii. Replacement of faulty 330kV Circuit Breaker
- viii. Pre-Commissioning test on 40MVA 132/33kV Mobitral and Energized at Auchu T/S
- ix. Newly Installed 75MX 330kV, 6R1 Shunt reactor was Energized at Benin T/S
- x. Commissioning of new 132kV GCB on Oshogbo/Akure 132kV line at Akure TS
- xi. Commissioning of 132kV GCB on T1A 30MVA pry at Akure TS
- xii. Commissioning of T1 60MVA, 132/33kV Transformer at Aja T/S
- xiii. Installation of 330kV Circuit Breaker CB1 at Gombe T/S
- xiv. Installation of New 300KVA Earthing Transformer at Omotosho T/S
- xv. Installation of New 132kV Circuit Breaker on Kankia/Katsina Line at Kankia T/S
- xvi. Installation of New 132kV Circuit Breaker Primary GCB on T2, 60MVA Transformer at Maryland T/S



There are no shortcuts
to the top of the palm
tree.

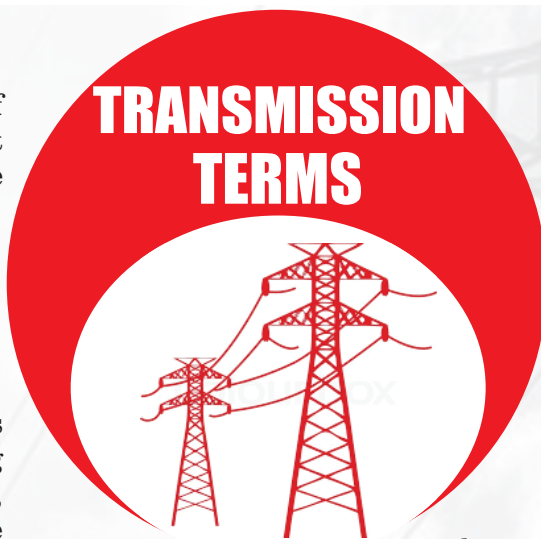
Demand: The amount of electricity being consumed at any given moment by a single customer, or by a group of customers. The total demand on a given system is the sum of all of the individual demands on that system occurring at the same moment. The peak demand is the highest demand occurring within a given span of time, usually a season or a year. The peak demand that a transmission or distribution system must carry sets the minimum requirement for its capacity (see also the definition for energy).

Demand - Side Management (DSM): A set of measures utilized to reduce energy consumption. Energy conservation is one kind of DSM.

Dispatch: As a verb: turning on or off, or setting the value or output of a generator, a capacitor bank, reactor or transformer setting. As a noun: the state or status of these devices.

Distribution: Distribution lines and distribution

TRANSMISSION TERMS



station
s operate at lower voltage than the transmission systems that feed them. They carry electricity from the transmission system to local customers. When compared to transmission, distribution lines generally use shorter poles, have shorter wire spans between poles and are usually found alongside streets and roads, or buried beneath them. Typical distribution voltage in Nigeria are 33kV, 11kV and 0.415kV.

Distribution Utility: A utility in a franchise area that is responsible for owning, operating, and maintain the distribution part of the electric system within an

area.

Fault: The failure of a line, transformer, or other electrical component. Once such a component has failed (due to overheating, short-circuiting, physical breakage, or other trauma) it is automatically taken out of operation by a circuit breaker that quickly turns the component off. Once it has been "tripped off" it no longer poses a threat to human safety, but its loss may present a difficult burden to the remaining system.

Renewable power source: Any power source that does not run on a finite fuel which will eventually run out, such as coal, oil, or natural gas. Renewable power sources include solar, wind and hydro generators, because sunlight, wind and running water will not run out. Generators that burn replaceable fuels also commonly qualify as renewable power sources. Examples include bio-diesel generators that run on crop-derived fuels and wood-burning generators.

DID YOU KNOW ?



Recirculated, Toxic Air Clogs Your Lungs

The air inside a building can be up to 100 times dirtier than outside, and you're exposed to a variety of unhealthy gases and chemicals. There are pollutants in the air conditioning, as well as toxic particles, dangerous bacteria, and mold all lying around, especially in buildings that aren't well taken care of.

Over-Exposure to Printers and Photocopiers Could Lead To Lung Disease

Photocopiers are a source of potentially deadly ozone if the filter isn't periodically changed, and it's possible that even very small amounts can cause chest pain and irritation. Laser printers do this, too, and they also release toner particles that can get in your lungs and blood stream, which could lead to lung disease and other ailments.



MD/CEO TCN, Usman Gur Mohammed at the National Agency for Science and Engineering Infrastructure, NESENI, day event of the Ministry of Science & Technology tagged Technology & Innovation Expo on 17th March 2020.



Niger Delta Power Holding Company (NDPHC) meet with the Management of TCN today, to resolve issues on the Makurdi - Uguwaji 330kV DC line Optic Ground Wire (OPGW) link and other NDPHC projects



TCN management led by the MD/CEO, TCN, U.G Mohammed paid a courtesy visit to the President, Nigerian Society of Engineers (NSE), Engr. Baba Gana Mohammed, FNSE, on Wednesday, 18th March, 2020.



A two-day bi-annual meeting of TCN - ISO heads of Human Resource with the theme: Next Generation Leaders, Building Capacity to Ensure Successful Transition, held in Port Harcourt, Rivers State on the 18th and 19th of March, 2020.

Name: _____

WORD SEARCH PUZZLE

D	A	P	E	N	R	D	A	J	Z	N	J	Y	P	X	C	H	C	A	C	P	K	B	J	N	I	N	N
K	Z	D	R	E	W	O	P	R	O	J	E	C	T	R	G	D	L	G	R	H	E	Z	B	K	Z	E	O
Y	V	C	U	X	Y	K	O	P	R	N	G	L	H	N	E	G	R	M	R	Q	W	R	U	B	Y	J	I
U	T	I	T	R	L	L	C	T	E	O	O	O	O	P	V	J	G	O	U	P	E	F	T	K	I	O	T
X	X	R	S	P	O	W	E	R	K	V	T	I	U	V	Y	A	T	H	P	W	D	R	K	N	B	F	A
N	C	T	P	E	I	R	G	U	O	H	T	A	S	K	T	A	O	O	O	I	J	E	O	C	Z	F	T
P	D	C	C	U	N	U	T	L	Q	A	A	C	R	S	R	T	C	H	W	L	T	Q	B	H	O	-	S
S	G	E	K	C	T	K	I	W	T	I	A	R	W	E	I	A	A	E	E	B	O	U	F	P	Y	G	I
D	N	L	T	U	E	K	V	S	Y	D	O	T	P	V	P	M	U	W	R	V	S	E	Z	T	R	R	Q
N	Y	E	W	E	C	Q	B	G	A	L	S	O	I	A	E	O	S	B	O	V	O	N	I	B	A	I	L
N	Y	H	T	Y	N	U	L	R	H	D	T	Z	C	N	B	P	M	N	P	L	C	C	N	F	L	D	E
S	Z	R	U	K	S	A	P	E	P	E	C	I	C	V	F	Y	I	E	A	S	I	Y	Y	I	O	W	R
D	I	R	G	-	I	N	I	M	K	Z	T	I	A	T	F	W	I	N	T	R	P	K	N	E	S	J	L
S	D	X	P	A	N	E	L	R	P	Y	S	E	P	I	N	Q	W	X	T	S	T	V	S	U	Y	F	P
B	D	R	P	P	A	W	A	O	H	N	Y	T	A	M	L	O	G	C	U	D	Y	R	E	F	G	H	M
L	N	L	A	N	X	M	D	F	B	L	S	D	C	V	S	R	E	W	O	T	E	S	S	C	R	E	F
O	Q	Q	S	Y	Y	T	R	S	C	L	T	A	I	A	F	L	N	J	P	E	Y	B	S	P	E	K	G
L	E	B	E	A	-	E	O	N	C	K	E	X	T	H	E	X	Z	P	N	I	A	C	Q	D	N	H	K
R	I	G	C	C	L	H	T	A	A	W	M	L	O	Z	Z	S	M	I	O	Q	K	T	E	N	E	M	D
L	B	D	T	F	D	S	C	R	J	Z	Y	E	R	Z	I	N	G	J	Y	C	N	E	U	Q	E	R	F
F	I	Y	O	Y	E	D	A	T	A	X	P	V	B	R	C	N	V	B	E	P	S	Y	S	T	E	M	W
U	I	Z	R	N	H	H	E	L	I	N	E	D	A	F	E	U	M	E	G	A	W	A	T	T	S	D	U
Z	X	D	I	B	A	I	R	W	X	W	X	N	N	V	P	O	G	C	T	S	H	C	U	L	R	D	P
F	Y	L	B	T	A	X	U	B	Y	G	S	K	K	D	I	C	W	L	O	R	T	N	O	C	L	N	D

CAPACITORBANK
ELECTRIC
ENGINEERS
KILOVOLT
LINES
MINI-GRID
NEPA
PANEL
POWER
REACTOR
SOLAR
SWITCH-YARD
SYSTEMOPERATOR
TRANSFORMER
WAPP

CAPACITY
ELECTRICITY
FREQUENCY
KILOWATT
MARKETOPERATOR
NCC
NESI
PHCN
POWER
SCADA
STATION
SYSTEM
TCN
TRANSMISSION

CONTROL
ENERGY
FREQUENCY
LINE
MEGAWATTS
NEM
OFF-GRID
POWER
PROJECT
SECTOR
SUBSTATION
SYSTEM
TOWERS
TREP



Late Mrs Philomena Oni
AGM (ICT) ISO, CHQ



Late Garba Luka Bassahuwa
Officer I (HR), Kaduna Region



By Dr. Edet Ademiluyi

COVID -19 is the infectious disease caused by the novel coronavirus. This new virus was unknown before the outbreak which began in Wuhan China in December 2019. WHO has declared this outbreak a pandemic.

HOW IT SPREADS:

The human coronavirus are most commonly spread from an infected person to others through

- The Corona virus is spread by droplets produced through coughing and sneezing.
- Close personal contact such as touching and shaking hands. These droplets land on objects and surfaces around the person, so people then catch the disease by touching these surfaces, then touching their mouth, nose or eyes before washing their hands.



SYMPTOMS

Most common symptoms are fever, dry cough and difficulty in breathing. Others symptoms include – tiredness, aches and pain, catarrh, sore throat.

These symptoms are usually mild and begin gradually, some people become infected but don't develop any symptoms.

Most people, about 80% recover from the disease without needing special treatment.

About 16% become severely ill and develop difficulty breathing and need hospitalization.

The elderly, those with underlying medical problems such as high blood pressure, heart problems, and diabetes are more likely to develop serious illness. About 2% of people with the disease have died.

STATISTICS AS AT 11TH OF MARCH, 2020.

- Total number of cases – 121,605

- Total number of deaths – 4,371
 - Total number of recovered cases – 60,024.
- It has now spread to 114 countries.

COUNTRIES OUTSIDE CHINA WITH THE HIGHEST NUMBER OF CASES:

South Korea, Spain, Iran, Italy.

PREVENTION

There are currently no vaccines available to protect you against human corona virus infection. Transmission is reduced through:

- Washing your hands often with soap and water for at least 20 seconds or use alcohol based hand sanitizer.
- Avoiding touching eyes, nose or mouth with unwashed hands.
- Avoiding close contact with people who are sick – stay at least 3 feet away.
- Practice hand hygiene, environmental hygiene (disinfect frequently touched surfaces around), social distancing and boosting immune system.

If you are mildly sick, keep yourself hydrated, stay at home and rest.

If you are concerned about your symptoms, you should see your healthcare provider. Cover your cough or sneeze with disposable tissue or the bend of your elbow and avoid crowded places.

WAYS TO BOOST IMMUNITY

1. Relax – get enough rest and sleep and manage stress well.
2. Drink green tea.
3. Get some gentle exercise regularly and maintain a healthy weight.
4. Eat a healthy plant based diet full of fruits and vegetables, nuts, seeds, probiotics.
5. Stop smoking and drinking alcohol excessively.



**THE MANAGEMENT OF
THE TRANSMISSION COMPANY OF NIGERIA, TCN
WANTS YOU TO STAY SAFE WHILE STAKEHOLDERS
BATTLE THE CORONAVIRUS, COVID-19 PANDEMIC.**



WASH YOUR HANDS OFTEN
with soap & water for at
least 20 seconds or use an
alcohol-based hand sanitizer.



CLEAN & DISINFECT
frequently touched
objects & surfaces.



STAY HOME
if you are sick.



WEAR A FACE MASK
if you are sick.



AVOID TOUCHING
your eyes, nose, & mouth
with unwashed hands.
AVOID CLOSE CONTACT
with people who are sick.



COVER MOUTH & NOSE
with a tissue or your sleeve
(not your hands)
when coughing or sneezing.

EDITORIAL TEAM

Publisher:

U. G. Mohammed

Editorial Advisers:

Engr. Victor Adewumi
Engr. Mamman Lawan

Editor in Chief:

Ndidi Mbah

Editor:

Engr. Kabiru Adamu
Mayowa Adewole

Correspondents:

Kazah-Akau Billi
Eric Ephraim Ene
Ejikonye Stella
Mary Philip-Udom
Joy Egbase
Omideji Oluwakayode

Gabriel Gandu

Grace Sambe-Jauro
Maimuna Isah-Laden

Graphics:

Uloma Osuagwu

Video/Photo:

Mojeed Olawuwo

Columnists:

Ismail Dalhatu
Seun Amoda