



# NBRRI

## *Newsletter*

Vol. 6 No 5, January, 2018  
1st QUARTER EDITION



## **NBRRI GOVERNING BOARD INAUGURATED**

### BY HON. MINISTER



## **NBRRI DIRECTOR RETIRES IN GRAND STYLE**

>>9

## Director General/CEO

Prof. D.S Matawal

## Ag. Editor-In-Chief

Daniel O. Makava

## Associate Editor

Peter Mashem

## Staff Writers

Oneshi Umoche  
Josephine Adeyemi  
Aminat Adekunle  
Yatasu Abdulsalam  
Blessed Ugbede  
Uham Danshak  
Makava Richard

## Photographer

Olotu Mohammed

## Address

NBRRI, Plot 449, Samuel Ogedengbe  
Crescent, Jabi - Abuja

PMB 1055 Ota, Ogun State

website: [www.nbrri.gov.ng](http://www.nbrri.gov.ng)

All Correspondence to the Director General/CEO

**NBRRI**  
**(VISION, MISSION & CORE VALUES)**  
**BUILDING CAPACITY & SETTING THE**  
**PACE IN INDIGENOUS CONSTRUCTION**  
**TECHNOLOGY DEVELOPMENT**

### VISION

To evolve and use a comprehensive and integrated approach in capacity building and investment promotion so as to foster the application of environment-friendly and energy-efficient innovation construction materials, manufacturing technologies and cost-effective building and road construction practices.

Which will enhance job-creation, wealth generation and poverty reduction as well as nurture the emergence of vibrant, knowledge-based and highly competitive indigenous construction companies capable of meeting global standards.

### MISSION

Integrated R&B, Capacity building and robust extension services in which technology innovation and knowledge-based practices in the fields of building road and engineering materials will be used to provide adequate and affordable housing and road infrastructure as well as increased economic empowerment.

### CORE VALUE

- ♦ Professionalism
- ♦ Resourcefulness
- ♦ Commitment and Integrity
- ♦ Innovativeness

# EDITORIAL

**AS THE** year 2018 gradually takes shape and as all government and private sectors fall in line with set goals and timelines, I sincerely and heartily wish to welcome you once again our esteemed readers to a rewarding year full of hopes and aspirations for a great Nigeria. We at the Nigerian Building and Road Research Institute are working assiduously on a number of research activities including the upcoming NBRRI International Conference Tagged: **"Sustainable Development Goals and the Nigerian Construction Industry-Challenges and the Way Forward"** please stay with us in our subsequent editions for this epoch-making, brainstorming series.

Back to the most recent event in the Institute. I'm most honoured in this special edition to present to you the new Governing Board of the Nigerian Building and Road Research Institute (NBRRI) as constituted by His Excellency, President Muhammadu Buhari. The Governing Board was formerly inaugurated on Thursday 8<sup>th</sup> March, 2018 at the Conference Hall of the Federal Ministry of Foreign Affairs, Abuja.

We present to you all the happenings and pictures at the inauguration ceremony as we welcome our Board members to NBRRI and wish them a successful tenure.

Similarly in her expose style, the Federal Ministry of Science and Technology held its annual 2018 Science, Technology and Innovation Expo with the theme: **"Fast Tracking Sustainable Development of Nigeria through Science and Technology"**. The event took place from 5<sup>th</sup> – 9<sup>th</sup> March, 2018 at the Eagle Square, Abuja, with top government dignitaries, professional bodies, private sectors in attendance.

This edition of the NBRRI Newsletter brings your way a heart-warming interview with a retiring Director of the Institute's Planning and Information Technology Department, Mr. Tunde Michael Adeyanju. Kindly spare some time to listen to a seasoned administrator, father figure as he share his experience in NBRRI and the science and technology family in general.

An expository research paper on "THE ROLE OF LOCAL CONTENT POLICY IN THE DIVERSIFICATION OF NIGERIA'S ECONOMY" by Professor Danladi S Matawal is also part of our features in this edition.

These and many more stories including the regular Social Dairy are well packaged in this 1<sup>st</sup> quarter, 2018 edition.

Long live NBRRI

Long Live the FMST

Long Live the Federal Republic of Nigeria!!!

**Daniel O. Makava**

Acting Editor-In-Chief



# NBRRI Governing Board Inaugurated By Hon. Minister

**THE** Governing Board of the Nigerian Building and Road Research Institute has been formally inaugurated. The ceremony took place during the combined inauguration of the Boards of all 17 agencies under the aegis of the Federal Ministry of Science & Technology, on Thursday 8<sup>th</sup> March, 2018 at the Conference Hall of the Federal Ministry of Foreign Affairs, Abuja.

Inaugurating the Boards, the Hon. Minister FMST, His Excellency Dr. Ogonnaya Onu told the appointees to see their nomination as a call to national service. Onu urged them not to disappoint President Muhammadu Buhari, considering the commitment and deep sense of responsibility with which Mr. President is tackling the challenges of making Nigeria a better place for the unborn generations.

The Minister noted the crucial role science; technology and innovation play in nation building and urged the appointees to work hard to succeed

in the interest of our beloved country.

He affirmed that the Federal Ministry of Science and Technology is determined to help Nigeria become a prosperous nation; adding that it is the general conviction that unless everyone works hard and remains committed to the task of diversifying the economy, science, technology and innovation will not play its expected role.

Dr. Onu urged them to carefully study the new National Science, Technology and Innovation Road map (2017-2030) which is crucial in the effective deployment of ST&I to the challenges of building a modern Nigeria.

He further enjoined them to be familiar with the Presidential Executive Order for the planning and execution of projects, programmes and contracts with science, engineering and technology components. The Minister noted that the order

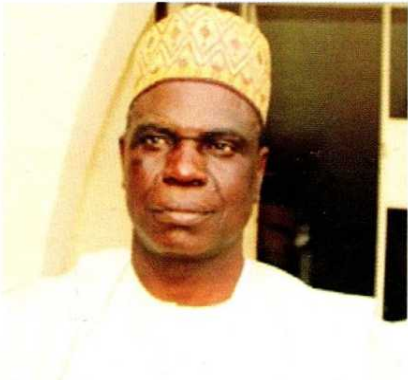
aims to rebirth new Nigeria with the necessary local capacity that will reduce capital flight, strengthen manpower development and restore national pride.

After the Inauguration, the NBRRRI Board members came to the Administrative Headquarters of the Institute in Jabi, Abuja where they were formally welcomed by the DG/CEO, Prof. D.S Matawal and other top management staff.

**Members of the NBRRRI Governing Board are:**  
Honorable Williams Wadni - (Chairman)  
Chief Gibson Chigbu  
Hon. AlhassanUbaldris  
Mrs. OpeyemiMorohunkeji  
Mr. Aliyu Bello - (Representative of FMPWH)  
Mr. Peter Ekweozoh - (Representing FMST)  
Aminu Bello Dogondaji - (Representing FMT&I)  
The DG/CEO NBRRRI is a member and Secretary of the Board



**NBRRRI BOARD MEMBERS IN PICTURES**



Hon. Williams Wadni (Chairman)



Hon. Alhassan Uba Idris



Mrs. Opeyemi Morohunkeji



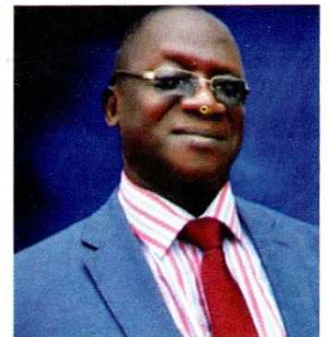
Mr. Aminu Bello Dogondaji  
(Rep. FMT&I)



Chief Gibson Chigbu



Mr. Peter Ekweozoh  
(Rep. FMST)



Prof. Danladi Matawal, DG/  
CEO NBRRRI member/  
Secretary of the Board

(Member/Secretary of the Board)  
**NBRRI BOARD INUAGURATION PHOTO GALLERY**



The Board members pose for a photo at the NBRRI Administrative headquarters after the Inauguration



Hon. W. Wadni



Alhaji A. Uba Idris



Hon. Wadni, Prof. Matawal and Mr. Ekweozoh. Mrs. Morhunkeji is behind



Chief Gibson Chigbu and his daughter at the event



Prof. Matawal and Hon. Wadni



Alhaji Aminu Dogondaji and Pastor Edwin Ezeh



Mrs. O. Morohunkeji (NBRI Board member)



Prof. Matawal with the DG NASDRA, Prof M. Saidu



Prof. Matawal and COREN President, Engr. Kashim Ali



Prof. Matawal and DG FIRO, Dr. Gloria Elemo



Hon. Minister arriving the event



Prof. Matawal and some DGs singing the National Anthem



Time for the opening prayers



Members of the high table during the event



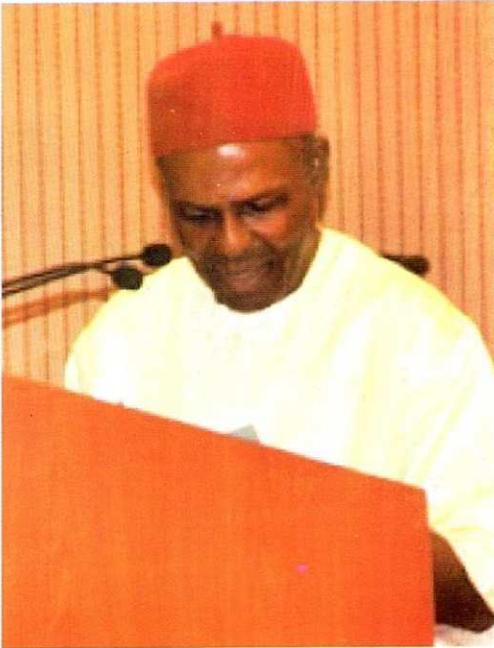
Dr. Adebayo Shittu Minister of Communications and Prof. Anthony Onwuka, Minister of State for Education at the event.



Perm Sec FMST Dr. Amina B. Shamaki



Prof. Matawal and Mr. P. Ekweozoh (FMST)

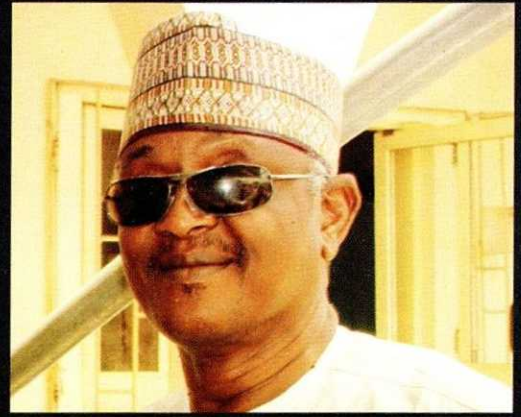


Hon. Minister FMST Dr. O. Onu giving his address



Hon. W. Wadni, Alhaji A. Uba Idris and Mr. P. Ekweozoh

# NBRRI Director, Tunde Michael Adeyanju Retires In Grand Style



**THE POPULAR** saying that 'It is not how far, but how well' can best describe the atmosphere when Mr. Tunde Michael Adeyanju, the Director of Planning and Information Technology Department of NBRRI bows out of office on 3<sup>rd</sup> February, 2018 after clocking the service age of 60 years.

To mark the occasion, the Planning and Information Technology Department, NBRRI, Abuja recently hosted the entire staff of the Institute to a befitting sent forth party in honour of their Director, Mr. T. M as fondly called.

Being a man of the people, an encomium was lavished on him with the DG/CEO of NBRRI, Prof. D.S Matawal leading the praise followed by other directors, heads of departments and units as well as selected staff. They all gave glorying tributes to the retiree with others narrating encounters with Mr. Adeyanju that stood out for them.

For over 25 years of meritorious service to the Federal Republic of Nigeria and especially to the Nigerian Building and Road Research Institute (NBRRI) Mr. Tunde Michael Adeyanju, has served

with honour and distinction in numerous positions. He not only served NBRRI but also the Federal Ministry of Science and Technology and Nigeria at large in various capacities.

They include; Head Computer Unit, National Coordinating Office for Computer Millennium Bug (March 1999 – October 2000); Head, Website Development Unit, President Network Project, Federal Ministry of Science and Technology (2001-2004); Member, National Task Force, Commonwealth Heads of Government Meeting, Abuja (2003); Member, ICT planning committee , World information Telecommunication Union conference, Abuja; Member, Planning Committee, Commonwealth Tourism Ministers conference 2005) and member, implementation committee on Galaxy Backbone V-Sat and other IT infrastructure distribution.

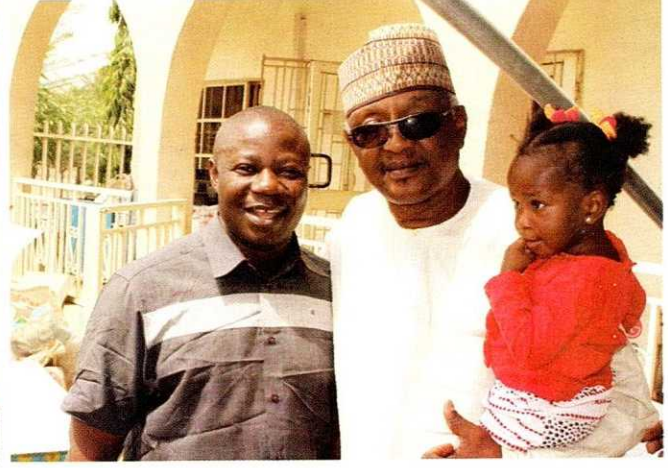
Mr. Adeyanju also headed the Management information System (MIS) Unit, FMST from 2004 -2007 and was the Acting Director of the ICT Department, FMST from its creation in June 2007 to 2008.

His unwavering dedication to duty and unparalleled professionalism has consistently earned the respect of subordinates, peers and superiors alike. An innovative and relentless achiever, his vast technical knowledge in ICT has greatly aided in the Institute's success where deployed, with little material support in setting up the ICT unit in the Federal Ministry of Science and Technology and indeed NBRRI.

It is significantly interesting to also note that, Mr. T. M. stands tall in all ramifications, not just in height but as the only Full blown gray-haired Director of NBRRI and indeed a rare phenomenon in the entire Science and Technology family. The entire NBRRI Newsletter crew wishes Mr. Adeyanju as wonderful retirement life.



NBRRI DG, Prof D.S Matawal congratulating Mr. T.M Adeyanju on his successfully retirement





# NBRRI Has One Of The Best Mandates In The Country

**NBRRI NEWSLETTER:** You are popularly called by staff as 'D-PIT', which stands for Director, Planning and Information Technology. So by way of introduction, who is Tunde Michael Adeyanju?

**MR. ADEYANJU:** Adeyanju is my Surname. I was born in 1958 in Kano. I began my Primary School education in Lagos before I went back to Kano. I worked with the Nigerian Airways for about two (2) years before I proceeded to do my HSC in Mubi, former Gongola State, now Adamawa state. After my HSC, I returned back to Lagos where I worked with United Bank for Africa (UBA) for about three (3) years before I proceeded to University of Lagos where I read Physics for my first degree. This got me a job as a Physics teacher in Lagos State where I taught for about nine (9) years. After my Masters degree in Physics, I then joined NBRRI in 1992.

**NBRRI NEWSLETTER:** Can you recall how you started work at NBRRI and the various Departments you have worked?

**MR. ADEYANJU:** I have such an interesting career in NBRRI. I started working in 1992 as a Research Officer in the Building Physics Department. I worked as a research officer for some time before switching over as a result of the introduction of computer to the Institute. As at then, the Institute had just one computer set; and it came to my observation that when NBRRI employs staff to man the computer section, they only work for about six months and

then resign. This brought my interest to work with the computer for I have little experience on the device then. With this, I approached the Management of the Institute who then agreed with my decision and I switched over from research officer to man the computer unit in the then Planning, Information and Production Department. Being the only one in the computer unit, I was eventually working with everybody in the department. This greatly helped my improvement on computer work to the extent that I ended up repairing the system myself. Unlike others, I did not resign; though it wasn't easy. It was the launching of the millennium bug by the Federal Ministry of Science and Technology that I was called upon from NBRRI office in Ota, Ogun state by the Ministry to come and head the computer unit in the Ministry. At then, the ministry had only two computer sets.

**NBRRI NEWSLETTER:** Sir, what exactly is the millennium bug?

**MR. ADEYANJU:** Millennium bug deals with the code in computer designing. In those days, the code used is 19xx and xx. These codes had a lot of issues because those that did the designing then never envisaged the year 2000. This also affected the Banking sector seriously that when the systems collapsed, people lose track of their transactions. To rectify this, the idea of writing new programmes came up to correct these issues. Then, when you put on a computer in the morning, it goes through a long stage of booting. There is something called BIOS. The BIOS only retain a memory of 19xx as the year code which you have to take care of first before your application can run properly. One memory I will never forget then was the experience of 31<sup>st</sup> December 1999 to user in 1<sup>st</sup> of January 2000. Everybody was glued to the internet and television to see if plane will fall from the sky because of the

date issue and most people believed that the world will end that night. Thank God the people involved were able to correct it before time. It was quite an experience.

After my assignment in the Ministry, I was giving another task to start up the IT unit. With this, I was held up in the ministry till 2009.

**NBRI NEWSLETTER:** Where is the world of Technology today compared to year 2000 when the bug issue came on? Also, how has it affected or helped our generation?

**MR. ADEYANJU:** A lot of things have happened after that in the IT sector. Computer came out around 1970s but between then and now things have changed to the extent that even children in nursery schools operate computer. When I was doing my PGD in Lagos, when we have assignments, we have to go to café but we were not allowed to use or touch the computer. What we do then is to write the code and give to the café operator who will input the codes for you for extra pay. But now, you can easily do assignments with phones and search for results from google. Those days, in the banking sector when you want to withdraw money, the bank will issue out tally and start calling the tally numbers one by one till it gets to your turn. Most times, you stay in the bank from 9am till 4pm before you can withdraw money. But today, it's easier with the invention of mobile transfer and ATM. You see

that things have really changed. Millennium bug was just an event to create that change and solve the problem. Technology is changing every day; a lot of things are coming up and integrated into one piece of device.

**NBRI NEWSLETTER:** On what scale will you rate the merit and demerit of these technologies we are talking about?

**MR. ADEYANJU:** It depends on what angle you are looking at it because it has really helped to do a lot of things easily and because the medium has no much control as to how people use the internet. If you look at that area, it is really a problem. The surprising aspect of it these days is that our children can now write virus codes. The merit and demerit are so much in terms of internet accessibility.

**NBRI NEWSLETTER:** You are among a privileged group of staff that worked with all the DGs of the institute. Please share with us your candid assessment of their tenures (their strengths and weaknesses, if any)

**MR. ADEYANJU:** I was privileged to work with all the DG's; although the first DG who was the pioneer DG; was a Director when I joined NBRI in 1992 and he left in 1996. He was a father to everybody, and he tried as much as he could despite



the many challenges around to achieve a lot based on his capacity as the pioneer DG. In his capacity, he did a lot to start up the bricks making. Another great achievement of him was the "Madotile" which was named after him. It was a great research that took place during his tenure. After him, Professor Ofuegbu came in. One thing he achieved that pleased me most was his effort for our budget allocation to increase and it has been going higher and higher ever since. Though it might not be enough due to the great mandate and task NBRRI has at hand. Then Dr. Ali came and started the Interlocking Block Making Machine and he improved on the previous research that took place. The most interesting DG to me is Professor Matawal. He improved tremendously on the Interlocking Block Making Machine and other researches he met on ground. He made series of new innovations and complete the ongoing ones. The acquisition of the new administrative complex under the current DG is something all NBRRI staff will cherish forever. That building is massive and I know the challenges he faced before acquiring the building because i was in the management and the records are there.

**NBRRI NEWSLETTER:** What has been some of your most memorable moments and the most challenging periods you encountered in your years in NBRRI? Also, we know the saying which says that 'reward for hard work is more work'. In your case, apart from more work, did you ever get any recommendation from NBRRI as a way of accelerated promotion?

**MR. ADEYANJU:** Actually my case is unique. I faced no much competition because I was the only one in my unit then; practically, I can say that I started the computer unit. There was a time I had accelerated promotion when NBRRI was celebrating her 20<sup>th</sup> anniversary; as at then, I was SRO and I was to move to Principal and DG decided to honour some staff and I was nominated; that gave me a rapid promotion.

**NBRRI NEWSLETTER:** How can Institution like NBRRI encourage her staff to do their best?

**MR. ADEYANJU:** I always have a saying for my staff: 'you can be a late comer and all negative attitudes but never be found wanting in your job because that is the only thing that brought you here'. My former director use to say 'even if there are no job for you, create one for yourself'. I worked as a research officer, planning officer and also budget officer at the same time because I was the only one in the department with my director; there was no other office under me. As for rewarding staff,



the management is trying. If they notice a staff, they take record of him or her.

**NBRRI NEWSLETTER:** Looking back from your assumption of office as the D-PIT, one can say that the department has recorded huge success. What will you say is the secret of your illustrious career at NBRRI?

**MR. ADEYANJU:** We are very lucky in this department. If the DG receives 10 letters at least 7 is coming to PIT which makes the department and all her units busy always. We have to be up and doing because the department is very vital in the institute.

**NBRRI NEWSLETTER:** Do you have any regret working in NBRRI or are there things you wished to be done differently?

**MR. ADEYANJU:** My regret in NBRRI is that I noticed that all the departments don't work together mostly in terms of communication and passing information. The interaction is not there and that is not good enough. It is better to synergize so that we can share ideas together. Another challenge is linking with other zonal offices. I hardly link with my people in Ota to know about what is happening in the department except occasionally when they send in request or I go there on official duties. Although I try my best to communicate with them but it is not as effective as it should be. Another regret is the issue of training. This is one serious aspect the Institute needs to address. Look at my area of assignment for example, IT is changing on daily bases and for you to be current, you need constant training. I know that funding is an issue but management needs to do something about it soonest.

**NBRRRI NEWSLETTER:** Based on the Institute's mandate, if given the opportunity to advice government or with lawmakers on reviewing the mandate of NBRRRI, which areas would you have loved to be reviewed for better performance and national development?

**MR. ADEYANJU:** The Act setting up NBRRRI is being amended and currently before the National Assembly. I know that some of these issues will be addressed by the grace of God. You can imagine our fine technologies that every Legislator wants to use it for their constituency project, if only NBRRRI will be given the mandate to be able to go commercial in these areas I think we may hardly need government subvention again. NBRRRI Pozzolana is another good area that government should popularize in the sense that if government can come up with policy that our blocks and the Pozzolana were to be used for some construction projects like market, clinics, schools in the rural areas and insisted that the contractors must use our technologies, it will make everybody busy. So government on its own should patronize us. To me, we still have one of the best mandates. Every government in power takes interest in our activities and potentials. As such; patronage from government is very essential.

**NBRRRI NEWSLETTER:** What is your assessment so far of NBRRRI Staff?

**MR. ADEYANJU:** Most of them are hard working which is what keeps elevating the Institute. Although a few are nonchalant; however, if only we all can refocus our attention, I believe the sky is the limit for NBRRRI. The output of our staff

will determine the success of NBRRRI and that is important.

**NBRRRI NEWSLETTER:** In brief, what are your words of advice to the DG/management staff?

**MR. ADEYANJU:** NBRRRI is a wonderful place to work and honestly it will go places. I remember all my years in the Ministry of Science and Technology, I am always proud of the Institute and I don't hide it from any Minister or Permanent Secretary that comes that am a staff of NBRRRI. The current DG is always trying to make NBRRRI known all over and to publicize the Institute requires a lot of money; but all the same, we have to work harder, so that we can project NBRRRI positively. I believe that when they see our hard work, government will be more interested in us. As for any assignment or project given to us; we need to do it with all our hearts and efficiently. With the little the Legislators have seen, they are proud of NBRRRI. We must also collaborate more with the private sector and I pray that the day will come when an Estate developer will approach NBRRRI to build a massive Estate.

**NBRRRI NEWSLETTER:** Sir, for a man to be successful he needs total support of his family. What has been the level of support from your family and how did they contribute to your success in the public service?

**MR. ADEYANJU:** If I have not had support of my family I wouldn't have been here because they have been wonderful. God has blessed me with a wife that understands me, my children are also wonderful; with the grace of God they are all graduates today.



NBRRRI newsletter crew in pix with Mr. T. M. Adeyanju

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***"NBRRRI is a wonderful place to work and honestly it will go places."***

***"If I have not had support of my family I wouldn't have been here because they have been wonderful"***

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# NBRRI Shines At Science Expo 2018



H.E Vice President YemiOsinbajo delivering Mr. Presidents address at the 2018 EXPO

**THE NIGERIAN** Building and Road Research Institute (NBRRI) drew the most crowd to its exhibition stand at the Technology and Innovation Expo 2018 which took place from the 5th – 9th March, 2018 at the Eagle Square, Abuja. The weeklong event organized by the Federal Ministry of Science and Technology had the theme: "Fast tracking sustainable development of Nigeria through Science and Technology"

Building upon the objectives of last year's Expo, the main objectives of the 2018 edition of the Technology and Innovation Expo were to:

- Follow-up on Memorandum of Understanding (MoUs) signed as a result of the previous Expo;
- Encourage interactions between Researchers and Investors with a view to commercializing research results, inventions and innovations from Nigeria's research and tertiary institutions;
- Promote collaborations among research institutions and researchers/inventors
- Facilitate growth of indigenous manufacturing hinged on Science, Technology and Innovation

(STI), as well as generally promote STI culture in Nigeria;

- Fast track the implementation of the National Science, Technology and Innovation Road Map' 2030.And,
- Bring to the fore the capabilities of Nigerian Scientists, Engineers, and Inventors/ Innovators in contributing to economic diversification of Nigeria.

The Vice President of the Federal Republic of Nigeria, Prof. Yemi Osinbajo who represented President Muhammadu Buhari at the opening ceremony of the 2018 edition expressed joy and satisfaction on the objectives of the Expo. The President noted that both at home and abroad Nigerians have always demonstrated remarkable ingenuity and inventiveness; adding that with the right environment, and policy support, there is no limit to how far Nigerian innovations can go. Mr President also emphasized that every challenge that we face as a Country- in terms of security, infrastructure

deficit, financial inclusion, and so on – is a natural laboratory for the manifestation of ground-breaking homegrown innovation.

In his address, the Minister of Science and Technology, His Excellency Dr. Ogonnaya Onu, said that the 2018 Technology and Innovation expo was intended as part of Federal Government commitment to stimulate technological inventions, innovations as well as research and development for the purpose of commercialization.

He said the Expo was packaged to bring together researchers, inventors and innovators with the overall aim of bringing into focus the innovative capacity both in the research institutes, universities and industrial laboratories as well as in the informal sector of the economy.

According to the Minister, the theme of the Expo was chosen to showcase the centrality of Science and Technology as tools for industrialization. It underlines the importance of supporting local production towards "Make-in-Nigeria" drive of the Muhammadu Buhari's administration.

As part of NBBRI's own efforts to create and improve on her technology, the institute erected Three (3) Bedrooms movable house as an improvement from the one bedroom presented at the 2017 Expo. The three bedrooms house which can be dismantled and

reassembled at different location with ease became a prime focus for most visitors, exhibitors and participants at the Expo. Also, most dignitaries who came around were overwhelmed with the structure and showed interest of patronage and collaboration with NBRRI to procure such for their constituency projects. Numerous other R&D innovations in Road, Building and Engineering materials were displayed by NBRRI.

Most visitors noted that NBRRI should work hand in hand with the private sector for the purpose of commercialization and wider range of publicity. Some stated that the private sector has an important role to play in nurturing innovation in Nigeria, by directly investing in it, and by supporting the nation's Universities and research institutions.

Other products presented by NBRRI at the expo were: Solar domestic water heater, NBRRI interlocking block making Machine, Rubberized Asphalt Mat for Road Maintenance and Pozzolana cement.

The weeklong 2018 Science and Technology Expo, came to a close in Abuja amid wide fanfare, exhibiting a plethora of new and improved products by public and private research and development institutions. The closing ceremony had the Speaker of the Federal House of Representatives, Hon. Yakubu Dogara as the Special Guest of Honour.



Hon. Minister (FMST) Dr. Ogonnaya Onu giving his welcoming address



NBRRI moveable 3 Bedroom House drew a large crowd at the Expo

# SCIENCE EXPO 2018 PHOTO GALLERY



The NBRI Hydrafoam Interlocking block making machine



H.E Vice President Yemi Osinbajo arriving the event



Dignitaries at the opening of the EXPO



Cultural dance display during the opening of the 2018 EXPO



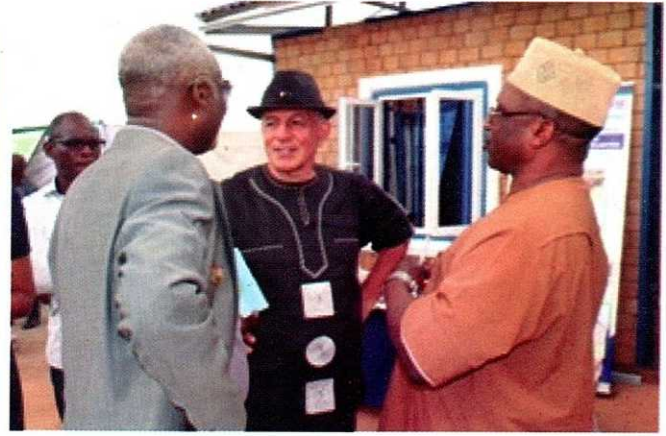
Hon. Minister FMST Dr. O. Onu going to give his Welcome address



H.E Vice President Osinbajo presenting an award to a student



NBRRi moveable 3 Bedroom House



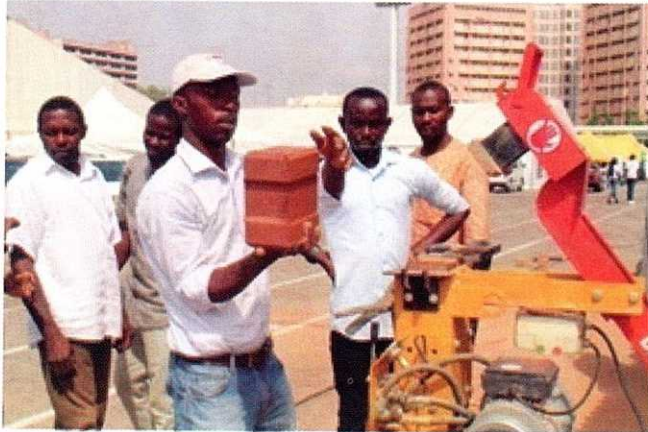
DG NBRRi with some guests



DG NBRRi being interviewed by the press



Staff chilling inside the NBRRi house



Demonstration of the NBRRi block making machine



DG NBRRi inspecting the Solar heater



DG NBRRi explaining to the Hon. Minister



Hon. Minister, PS FMST inside the NBRRi house



Hon Minister holding a NBRRI interlocking block



Top Dignitaries at the gallery



House Speaker Hon. Yakubu Dogara



Top Dignitaries at close of the 2018 EXPO



The band were there to entertain



Cultural troupe on hand to entertain guests at the EXPO

# THE ROLE OF LOCAL CONTENT POLICY IN THE DIVERSIFICATION OF NIGERIA'S ECONOMY

By Professor **D.S MATAWAL**

## 1. INTRODUCTION

First, diversification does imply looking for options, exploring different alternatives for doing things. Diversifying Nigeria's economy, in the concept of contemporary situation in the national picturesque, therefore simply implies exploring options to oil, emphatically crude petroleum, for national income and economic growth and development. However, local content is far more than oil influence because the national economy is influenced by such diverse indices that emanate from the things we generate internally, the things we consume, the things we export, the things that we import as well as in the context of our own participation in many critical spheres of economic activities especially those that have high economic returns and economics spin-offs. These therefore do not only include the Oil and Gas, but do also encompass agriculture, engineering and construction, Tourism, Industries, also commerce and social services like education, health, science and technology, etc.

In spite of the diverse nature of the Nigerian economy, the most popular intervention in the scope of this paper has been 'The Local Content Strategy' for the Oil and Gas industry. Overall, regulatory frameworks for local content in every sphere of economic activity is necessary requirement aimed to create jobs, promote enterprise development and accelerate the transfer of skills and technologies. Local content is therefore a strategic issue for every economic sphere of activity and industry that presents both challenges and opportunities. 'Local Content' may be defined to refer to the "added value" brought to a host nation (or region or locality) through:

- ♦ Workforce Development - which entails employment of local workforce; and training of local workforce; and



- ♦ Investments in Supplier Development - which entails developing supplies and services locally; and procuring supplies and services locally.

Local Content interpretation can be a bit more complicated where Host Communities are affected by a specified economic activity and their interests must be taken into cognizance and sharp focus to avert the effects of economic stagnation, environmental effects, and threat to security. Typical illustrations abound locally and internationally as can be understood from:

- i. The problems of the Nigerian Niger-Delta region where fertile farmlands and fishing grounds are polluted by the effects of oil exploration that degrades the environment has been responsible for emergence of armed groups in the region.
- ii. A case in Bokkos, Plateau State in 2016 in which 2500 hectares of Land in which local farmers produce about 25 percent of all Nigeria's Irish Potatoes output was

seized and given to an Israeli company to farm Maize was resisted by the people and, happily reversed by the government of the state.

- iii. The abandonment of traditional economic activities like Cotton, Groundnut, Water Melon, Maize, Fishing in Lake Chad, Rivers Benue and Gongola and other local endeavors in the North Eastern Nigeria has led to emergence of Terrorism and Insurgency by the infamous bokoharam sect.
- iv. About 1990 and for some years after, Fishermen in Osaka - Japan resisted for many years the development of the now famous Kansai International Airport which was to be developed from about 800 hectares of reclaimed deep sea used by local fishermen for fishing. Protracted confrontations with government went on for some years until alternative accommodation and fishing grounds were satisfactorily provided before the development took place.

v.

For this purpose 'Local Content' must capture local community content and national content in one term. Local content can be measured on a project basis, affiliate basis and/or country aggregate basis. Thus 'Local Content' is the added value brought to a host nation (and regional and local areas in that country) through the activities of specific industry in an economic sphere of activity.

## 2. LOCAL CONTENT IN THE NIGERIAN CONSTRUCTION INDUSTRY

Apart from Nigerians being overly impressed by the impact of the 'Local Content Act' on the oil and gas industry, it is an obvious thing of benefit to extend the policy to the construction industry. There are a variety of strategies that can be embarked upon for cheaper roads and mass/ social housing to address both infrastructure deficit in roads and other sectors as well as for the significant reduction of the country's housing deficit as well as open avenues for the development of affordable housing for the people. Nigeria could provide all the building components requirements as well as light construction equipment and implements for the Nigerian construction market and indeed all West African market. Building products like ceramics, tiles, sanitary wares, finishing products like; marbles, granites, etc, mostly imported

into this country can be produced in-house. It is ridiculous that huge boulders of rocks are exported from this country that are cut, shaped and polished into granite stones and tiles abroad and then imported back at much higher prices into the country again. A Local Content Strategy and Policy will assist Nigerians have a sense of pride, self-esteem and confidence in themselves and would lead, in the long run, to a drop in prices. Nigeria probably needs to look back a bit to previous eras, like the Gowon regime, when most of the current subsisting road networks were constructed. Nigerian engineering consultants were in charge and they were given the privilege to source for the right technical partners to work with. Foreign construction firms dominate Nigerian construction and they source equipment, materials and even labour from their own home country. As a consequence local contractors, consultants, material and equipment suppliers, and workers often do not benefit from the investment in the construction sector.

A Bill seeking to establish a Local Content Act for the Nigerian construction industry was in NASS, uncertain if it is already processed into Law. It has been stated somewhere that there has been a marked increase in the award of contracts to Nigerian companies since the initiation of this bill in NASS but only 12-18 percent of contract sums has been spent on Nigerian made goods. It is understood that the Nigeria Content Monitoring Board believes that without developing a manufacturing base there will be no further Nigerian content growth and no employment growth. This highlights the challenge of a local content initiative for the construction industry which will not only increase the percentage of contracts awarded to Nigerian owned firms but have the added value of job creation. Construction sector and construction activities are among the major sources of economic growth and development. Globally, the sector is considered as one of the largest fragmented industries with an estimate of annual global output of \$7.4 trillion in 2010. The sector plays an important role in the economic growth and development of any country. The global construction industry is projected to grow to \$8.5 trillion in 2015 and to \$10.3 trillion in 2020, when measured at constant 2010 prices and exchange rates (real 2010 US\$). The Nigerian construction industry is very influential in the economy but nonetheless.

An impediment to local content in Nigeria appears frequently that local manufacturing costs are high so that the products cannot compete with cheaper imports, due in part to the erratic supply of power. As is common in other African countries, the industry is extremely diverse. At one extreme is a formal organized part comprising publicly funded construction projects and projects funded by large private companies.

At the other extreme is a huge and largely unregulated sector comprising numerous small privately owned projects many of them residential and often referred to as the 'domestic' sector of construction. Foreign companies dominate in the organized part of the industry (public and large private projects) together with a handful of large Nigerian firms, some of which originated as joint ventures with international firms. In the unregulated sector, construction is carried out by small local enterprises or more frequently by artisans and gangs of labourers hired and supervised by the building owner. The government has no significant influence on the operations of this sector for which there is virtually no reliable data (ibid). The 'Local Content Act' is focused on improving incomes and creating jobs in the Nigerian construction and real estate sector. In a context suited for the construction sector, Nigerian content Local content can be defined

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***Nigeria probably needs to look back a bit to previous eras, like the Gowon regime, when most of the current subsisting road networks were constructed. Nigerian engineering consultants were in charge and they were given the privilege to source for the right technical partners to work with***

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in terms of the ownership and/or location of the enterprises involved in production and/or the value - added in the production process. It includes the involvement of local enterprises and labour in planning, design and construction services, as well as the locally added value in transactions occurring throughout the

contractors supply chain (Wells and Hawkins, 2008). Local in all context is understood to mean national, but it could be defined to mean any geographic or administrative area. The value - added approach can be phrased to imply "The quantum or composite value added to or created in the Nigerian economy by a systematic development of capabilities through the deliberate utilization of Nigerian human, material resources and services in the Nigerian Construction industry". A lot of inspiration seems to be drawn from the South African "Broad - Based Black Economic Empowerment" (B - BBEE) in their 2003 Act which can be amended to apply to Nigerian Peoples. In this conception, it implies the 'economic empowerment of all Nigerian Citizens including women, workers, youth, people with disabilities and people living in rural areas through diverse but integrated socio - economic strategies to manage, own and control enterprises and productive assets; facilitate ownership and management of enterprises and productive assets by communities, workers, cooperatives and other collective enterprises. It also implies schemes to encourage and promote: Human resources and skills development; Achieving equitable representation in all occupational categories and levels in the workforce; Preferential procurement; and Investment in enterprises that are owned or managed by the Nigerian people.

In order to be effective, any Nigerian Content policy must firstly acknowledge that there are various types and ways of delivering local content and secondly provide a method for measuring or assessing the extent that local content is delivered according to each category. Another illustration is that of Malaysia where, generally, Local content laws require at least 51% of company shares to be owned by (bumiputera) Malaysians. A recent report by Global Witness found evidence that this local content requirement in Sarawak is routinely circumvented by exploiting the poorest people in the country. First, foreign investors identify a local person willing to act as a nominee (usually someone who is uneducated or living in the rural areas). Through an offshore agreement that is 'untraceable' in Malaysia, the foreign investor then advances a loan (of a nominal sum) to the Malaysian nominee, using the Malaysian 51% shares as collateral against the loan. This agreement transfers control of the

shares to the foreign investor who gains de facto control over the company. This means that the company is in reality 100% foreign owned, or at least foreign controlled. The nominee in most cases never requests or regains control of his shares. Another common practice is the creation of 'shell' companies where locals act as 'front - men' for foreign businesses. Usually, the local company lacks the expertise or capacity to perform the obligations in the contract. The company becomes a 'commission agent' sub - contracting the initial contract to other firms. This increases costs and waste. In both these examples, local content requirements prioritizing the Enterprise approach did not translate into increased participation of 'local' firms or increased job opportunities for

local people or increased skills and knowledge transfer, training or learning. Instead it contributed to time, cost and resource inefficiencies.

### 3. NIGERIAN BUILDING & ROAD RESEARCH INSTITUTE & LOCAL CONTENT

**3.1 Mandates:** NBRRRI established via NSTDA decree 1977 & commenced operations 1<sup>st</sup> April 1978 with an aim to 'build capacity, conduct integrated applied Research and Development & set the pace in indigenous construction technology development'. To evolve & use a comprehensive integrated approach in appropriate technology development & transfer, sustainable capacity building & investment promotion to foster the application of environment-friendly & energy-efficient innovative construction materials, manufacturing technologies for cost-effective building & road construction practices that will enhance job creation, wealth generation & poverty reduction as well as nurture the emergence of vibrant, knowledge-based & highly competitive indigenous construction practice capable of meeting global standards.

To improve the quality of life of Nigerians in the area of affordable housing and increased economic empowerment through integrated R&D, Capacity Building and robust Extension Services in which technological innovations and knowledge-based practices in the fields of Building, Road and Engineering Materials. NBRRRI Act requires the Institute to conduct research in:

- i) local building & construction materials to determine the most effective & economic methods for their utilization;
- ii) architectural design of buildings to suit Nigerian climatic conditions with respect to lighting, ventilation, thermal comfort & humidity;
- iii) design & performance of functional units in buildings including electrical installations, plumbing, painting, drainage, ventilation & air-conditioning system;
- iv) local construction, foundation and earth-works for buildings and bridges, especially on problem soils;
- v) local construction, building operations & methods, to increase their effectiveness;
- v) the design & construction of roads best suited to Nigerian environment;
- vi) the economic & social aspects of the bldg & construction industry;
- vii) road safety including the occurrence of accidents & methods of reducing the number of accidents;
- viii) the economic & social aspects of road & transportation schemes, accidents and safety measures;
- ix) structural designs of buildings & bridges & the development of design criteria, specifications & codes of practice;
- x) all classes of engineering materials - metals, ceramics, polymers, etc., including the systems for their conversion & processing, materials production & synthesis, materials development, materials availability, processing & applications, materials failure analysis & prevention, corrosion protection & foundry technology.

**3.2 NBRRRI Technologies for Adoption and Promotion:** NBRRRI has impacted meaningfully in many respects and the adoption and promotion of many of its innovations will go a long way in achieving 'Local Content' through commercialization, import substitution, industrialization, job creation and wealth generation. An elaboration is made on these in subsequent paragraphs.

**i) Technologies for Housing:** Rural Dwellers, Medium & Low Income City Dwellers have serious housing problems in terms of shortages, comfort and affordability. Housing Challenge being compounded by Rural-Urban migration, 70% of African population will live in

Cities by 2050 and Nigeria is not an exception. There is rapid development of Urban Slum settlements in Nigeria: Building collapse is one resulting phenomenon and illustration of the urban scenario can be made by the population of five(5) Nigerian cities in 2009: Lagos 10.203 million; Kano 3.304 million; Ibadan 2.762 million; Abuja 1.857 million; Kaduna 1.519 million. The Nigerian Population is projected to grow to 440 million in 2050 to become the third most populous country in the world.

Therefore issues of Housing Affordability, Mass and Social Housing, Housing Ownership and addressing the Nigerian Housing Deficit currently estimated at over 17 million is a critical matter of concern. Hence in the past, NBRRI R&D in this sector has included the development of cheaper alternative building materials from locally abundant raw materials for housing, Pozzolana from agro-industrial wastes like RHA, Roofing sheets from coir fibre & Road materials, Building physics—thermal comfort studies, lighting, ventilation, acoustics and solar energy. Well catalogued contributions to Nation Building in the area of 'Alternative Building Materials from Local Raw Materials' include:

- brick making machine (manual) that produces 5% cement stabilized compressed bricks with strength not less than  $1.7n/mm^2$ .
- electro hydraulic brick making machine (with double mould) that produces 5% cement stabilized compressed bricks.
- interlocking block making machine - manual type
- interlocking block making machine - diesel engine model
- interlocking block making machine with diesel engine (improved version)
- others include laterite grinding, laterite mixing, paving stone making machine (manual and electro hydraulic, fibre concrete roof tile making machine, clay roof tile making machine, semi sheet roof tech, tools for bricklaying, tools for plastering.

**ii) Technologies for Roads:** The Community -based Technology for construction and maintenance of access/feeder roads has been an innovation of the Institute that is useful for creating arterial and secondary roads that

can become major routes of the future. It is a popular scheme in many parts of the world for putting unemployed youth into useful gainful activities. The major NBRRI innovation in this sector is Roller Compactor with Vibratory element and this has continued to progress with design & production of the Gear Box for use in fabrication. The development of Digitized Subgrade Soil Maps (DSSM) that assist road construction activities in preliminary subgrade soil investigation and construction materials sourcing important for Highway Engineers, Contractors and Private Developers has been a landmark achievement as the 1st edition of the Engineering Subgrade Soils Atlas of Nigeria was launched on 31st January 2017.

### iii) Innovations for General Engineering and Construction:

Development of Sand Lime Bricks for use in affordable housing in Riverine areas, Particle Board from Agro-industrial wastes like Saw Dust, Paper, Polythene Bags, Sachet water Bags, etc. building energy efficient Kiln for firing Green clay to produce burnt clay, production of blended/Alternative Cement are innovations that need mentioning. The NBRRI Moulds project for Cement Mortar, Concrete and reinforced Concrete Test Cubes & Beam Moulds are also schemes aimed at import substitution.

Tests using nano based polymers, introduction of rubberized asphalt, production of glue-laminated woods from waste bamboo thrown away after use for scaffolding in construction sites have been important products of NBRRI R&D activities. Nano Polymer stabilization of soils, as example, has resulted to increase in unsoaked CBR from 200-600%, depending on the type of soil, when 1% polymer by weight of soil was introduced to the sample. Correspondingly, Universal Compressive strength (UCS) increased by about 400.

Pozzolana research, though already mentioned indirectly, has been a flagship research of the Institute that yielded a prototype pilot Plant for production of Pozzolana from calcined, pulverised clay, the first of its type in Nigeria. The second pilot plant is due for commissioning in 2018 and has involved the design, fabrication and installation of a Process Plant comprising of: Hammer Mills, Nodulizers, Palm Kernel Shell (PKS) Crushing Mills, Vertical Shaft Kiln (VSK), Ball Mill & Bagging/Metering Facility, for the prototype "NBRRI Pilot Pozzolana Cement

Plants". It is available for commercialization with the first pilot commissioned on 18th June 2017.

The Institute also produced and launched the Roads safety Guidelines for Nigeria, RSG 2014, and developed a robust, practical and relevant competency based curriculum for the training of artisans in 10 selected trades in the construction industry, namely: Masonry, Carpentry, Electrical Installation, Plumbing and Fittings, Tiling & Floor finishing, Iron bending, Painting & Decoration, Draughting & Detailing, Concreting, and Safety in Construction. The latter is in support of initiatives to stimulate training and re-training of Artisans and Craftsmen in Trade Gaps that Nigeria can easily target and achieve 100 percent local content and even export manpower. NBRRRI has also introduced the mobile housing concept in which the entire house can be dismantled, transported and set up in new locations according to the expedience of the owners with little more addition than ground preparation and transportation costs.

#### 4. CONCLUSION AND RECOMMENDATIONS

To end this discussion, successful local content programmes can be shaped by a clear understanding of the benefits and a well-defined strategic plan drawn up to achieve set targets. Fortunately, it does appear long time ago that this nation had recognized the need for Nigerians to take their destiny into their hands when national policies were drawn for involvement as Consultants in Nigerian Construction projects. At a certain time in the history of this nation, every project was handled by a Nigerian consultant who had the discretion of nominating or teaming up with foreign partners to design and execute projects in Nigeria. Unfortunately, this clearly 'Local Content' and technology acquisition policy got abandoned for many reasons, including shoddy deals, corruption and poor performance that can form a topic for another discussion. It also appear also that initial crafty schemes in the form of 'turn-key' projects in which entire giant schemes were designed wholly abroad and brought into Nigeria complete with foreign execution plans, equipment, personnel and even materials killed the policy from about 1979 to date.

I have looked at the Nigerian 'Local Content' policy and agree wholly with advocates that the fabrication industry may have one of the highest potential for increasing Nigerian content. This opinion emanates from an analysis of the potential for increasing employment and locally

manufactured equipment of a potent, precise and well articulated fabrication force in Nigeria.

A project in this regard can work to increase the competence and capabilities of small- and medium-sized fabricators in Nigeria, enabling them to better compete for business that will produce engineering and production tools, machines and various equipment for industries like oil and gas, agriculture, education, health, tourism, transportation, etc. and also intervene to transform NBRRRI R&D and that of other innovation sectors into flawless field applications for the benefit of Nigeria. The reason for my making this assertion is that we have tried it in NBRRRI where faulty fabrication has constituted a major concern for the trial applications of the numerous innovations enumerated earlier. Good fabricators will also empower enterprises to make good attempts at 'Reverse Engineering' and there is need to stress that one possible clear explanation for previous failures at sustainable industrialization is the absence of quality fabricators. I am informed that for the oil and gas sector, there had been a Nigerian-Norwegian initiative whose execution phase started in early 2008 in which an assessment of the quality management standards of seven small- and medium-sized Nigerian fabricators was undertaken that formed the basis for a two-year training programme that included classrooms and welding workshops in 2009. This followed success with similar schemes by Norway as well as Trinidad and Tobago.

Therefore some advantages of having a local content strategy include reductions in operational costs by keeping expatriate staff to a minimum; smoother flowing supplies of goods and services; protecting local innovations and enterprises, stimulating industrial growth, creating jobs, curbing exports to a strategic minimum, creating jobs, generating wealth and, overall, growing the Nigerian economy.

Therefore a strong local content policy accompanied by strategies for sustainable implementation in the construction industry would lead to immense advantages and benefits for the nation. Nigeria cannot remain a dependent nation forever importing every item required for housing, transportation and other sectors. A strong national policy protecting local content in labour, materials, industry, consultancy and contracting accompanied with appropriate protectionist and penalties will lead to huge economic benefits and development for the country.

# Research Don Joins NBRRI



**IN ITS** quest to drastically improve the quantum of research work conducted at the Nigerian Building and Road Research Institute (NBRRI), the Institute recently appointed a seasoned academician with the Abubakar Tafawa Balewa University, Bauchi, Engr. Dr Samson Duna as its Director in charge of Research.

Dr. Engr. Samson Duna was born on the 13<sup>th</sup> of March, 1968 in Katsina-Ala Benue state, and hails from Gombe state. He is an erudite scholar who had his first school leaving certificate in 1980; General Certificate of Education, June 1985; Bachelor of Engineering in Civil Engineering in 1991; Masters of Science in 1998; Doctor of Philosophy in 2012.

Samson Duna is a member, Nigerian Institute of Engineering Management, corporate member of the Nigerian Society of Engineers and a COREN Registered Engineer.

He has worked in both the private and public sector as an engineer and lecturer. As a Structural Engineer, he consulted for Partner For Development (PFD) where he conducted an investigative Study on bridge failure at Mwari Bogoro L.G.A Bauchi State in 2006; Consultant to Horman Nig. Ltd on Geotechnical investigation on the construction of Lariski – Kolmani road project at Alkaleri L.G.A Bauchi State in 1997.

In April, 2016, he became a visiting reader and an Associate Professor of Civil Engineering in Abubakar Tafawa Balewa University, Bauchi. He was promoted to the rank of Professor of Civil Engineering subject to positive external assessment October 2017.

Dr Duna Samson has many publications, seminar and conference papers, productive works as well as articles on professional issues. He has graduated many undergraduate and postgraduate students and has attended series of seminars and workshops locally.

He has a lot of awards to his credit amongst them are Merit Award by the Student Union Government (S U G) Abubakar Tafawa Balewa University Bauchi Chapter, 2013; Award of Excellence by Gombe State Students Association (GOSSA) ATBU Bauchi branch in the year 2013; Award of Excellence as "Icon of transformation" by National Youth Discovery and Creativity Initiative in the year 2017; Award of Academic Excellence by Abubakar Tafawa Balewa University Alumni Association, Plateau State Chapter in the year 2017.

Dr Duna loves Investigative Engineering Research, Interacting with the youths, Assisting the less privilege, watching football and community development.

**HIGHLIGHTS OF ONGOING RESEARCH & DEVELOPMENT IN ABUJA RESEARCH UNIT**  
**APPRAISING URBAN RENEWAL PROJECTS IN NIGERIA:**  
**CASE STUDIES OF SELECTED METROPOLISES IN NIGERIA'S**  
**GEOPOLITICAL ZONES.**

Surajo, L.A, Arc. Maton, D.J., Kigun, P. A., Buba, A.Y., Danjuma, A.G., Longtau, P., Makwin, G., Dr. Sule, J., Nyadar, B. and Amos-Audu, J.

**THERE** are claims by some state governments that they have executed various types of slum upgrade/Urban renewal projects in their respective states. However, a lot of questions are raised as to how sustainable are the programmes/initiatives; are the beneficiaries of such projects involved in selecting and implementation of the projects; what are the challenges encountered in the course of executing these programmes?

Therefore, the study intends to identify slum settlements and appraise slum upgrade/Renewal programmes/initiatives adopted by various authorities in the selected case studies with a view to identifying sustainable approaches to urban renewal and slum upgrade programmes/initiatives in Nigeria.

The research is adopting case study approach. It is also premised on the cultural influences on settlements development. This implies that communities that have homogenous norms and values tend to accept programmes/initiatives adopted by their neighbouring societies, whereas they reject programmes/initiatives that are imported from other places which they view as foreign. Hence the research team selects a prominent metropolis (city) in each of the six geopolitical zones of the country to serve as a case study so that the outcomes from the selected metropolises (Cities) can be easily adopted by the rest parts of the zones.

The expected outcomes, ultimately, will be a collection



*Plate 1 Slum Study Team and Staff of Ministry of Lands, Survey and Town Planning Plateau State*

of slum upgrade programmes/initiatives that are sustainable and which can be replicated in relation to peculiarities of challenges to be found in each case study area.

This research work began with a reconnaissance study on Jos the Plateau State capital (North Central Nigeria) being first among the selected metropolises that the study intends to cover.

The main purpose of this preliminary study was to establish contacts with relevant authorities identify location of slum upgrade/urban renewal areas and have audience with a section of key stakeholders with a view to generating the appropriate instruments and tools for the study proper.

**CHARACTERIZATION OF RICE HUSK**  
**ASH FROM SELECTED STATES IN NIGERIA**

Makwin, H.L., Abdulmumin, M. M., Ojo, E. B., Yola, A.M. and Machibi, J.T.

**THE** development and sustainability of affordable housing in Nigeria necessitated the optimization of emerging low cost construction materials, these materials are basically obtained from polycondensation of various waste materials with the potential of improving the durability and high performance of a system. Therefore, the conversion of waste to wealth could not only play a very significant role in the development of low cost construction materials but also address environmental issues, the environmental concern arising from the disposal of Rice husk (RH) is the main interest revolving around research community. Research findings have shown that calcination of RH gives rise to Rice Husk Ash (RHA), the RHA has high amount of Silicon Oxide

(SiO<sub>2</sub>) which could be nano-sized and used for wide range of applications in the built environment. RHA was characterized to determine the SiO<sub>2</sub> variation. The RH were sourced from selected states in Nigeria; (Fursa, Kano; Bida, Niger; Makudi, Benue; Kebbi and Miva Ash in Makudi). Rice husk calcined at 400, 650 and 850 °C for 120 minutes was tested for X-ray refraction (XRF), and X-ray diffraction (XRD) analysis. From the XRF and XRD analysis results, high SiO<sub>2</sub> were present in all the samples collected but varies with calcinations temperature. At 400 °C Fursa, Kano recorded the highest SiO<sub>2</sub> content of 96.4 %, the XRD analysis confirmed 400°C as the optimum calcinations parameters for obtaining high reactive RHA.

## ASSESSING THE POTENTIAL OF SELECTED KAOLIN FOR THE SYNTHESIS OF METAKAOLIN BASED GEOPOLYMER

Yola, A.M., Abdulmumin, M.M., Ojo, E.B, Makwin, H.L. and Waziri, F.

**THIS STUDY** is aimed at assessing the potential of selected kaolin within Nigeria for the synthesis of metakaolin based geopolymer. Four different kaolin samples were sourced from three locations; (Bokkos, Barikin Ladi and Bauchi ) and characterized to determine their physical properties, elemental composition and mineralogy. Geopolymer paste was produced by activating the metakaolin with alkaline solution comprising of Sodium hydroxide (NaOH) and Sodium silicate ( $\text{Na}_2\text{SiO}_3$ ) at varying alkaline ratios; 0.20, 0.25, 0.30 and 0.35 at a constant Molarity (8M) of NaOH solution. Bokkos white metakaoline was prepared and cast using mould size 10cm x10cm

x 0.15cm and cured in an oven for 60°C at varying duration; 1, 2 and 3 days. The results show that the kaolin samples possess the requisite alumina and silica composition for geopolymer reaction. At optimum reaction condition of 8M and alkaline ratio of 0.25, Bokkos white metakaolin resulted in a stable geopolymer. However, it was observed that extended curing of samples resulted in an average percentage reduction in compressive strength by 2.84% . It was concluded that the development of metakaoline based geopolymer has demonstrates the potential of utilization of locally sourced materials in the development of novel construction materials.

## ROAD NETWORK MAP OF NIGERIA USING GIS APPROACH, A CASE STUDY OF ABUJA

Amos-Audu, J., Longtau, P., Kigun, P. A., Buba, A.Y.,  
Majidadi, S.T., Makwin, G. and Nyadar, B.

**THE UPDATING** of road network databases is crucial to many Geographic Information System (GIS) applications such as navigation, urban planning. Abuja is a town where daily one form of road construction or diversion is taking place and new street names assigned to those roads. This proposal seeks to presents a comprehensive framework for image-based updating of the database for road network in Abuja, in which the following three tasks are to be performed sequentially: road extraction from imagery, road change detection and updating, a map conflation

step is then used to create an updated road network map in which the attributes will be transferred from the existing map to the new map based on the conjugate features resulting from the feature matching step which will be applied to determine the changed and unchanged portions of the road network. Finally GIS approach will be employed by using ArcGIS 10.4 to produce an updated map showing road network changes and a comprehensive database of Abuja. This will help for further planning, decision making and development of Abuja.

## AN ASSESSMENT OF FIRE SAFETY MANAGEMENT (FSM) IN NIGERIAN MARKETS.

Longtau, P., Arc. Maton, D.J., Majidadi, T.S., Abu, A.S.P., Emeson, S.,  
Moses-Audu, J. and Nden, T.

**FIRE OUTBREAK** in different parts of Nigeria has indeed assumed an alarming rate, schools, public/ government, petrol stations, shops, market buildings etc., have been ravaged by fire. Pertinent to note is the increasing number of lives lost in the outbreak. Over 60 markets have been visited by fire in Nigeria between 2010 and 2016. The National Association of Nigerian Traders (NANTS) has decried the incessant market fire across the country which it says has led to the loss of over N5.3 Trillion between May 1999 and March 2016. While traders lament that activities

of relevant fire-fighting institutions fall below par in their mandate of fire safety management, fire-fighting institutions are of the opinion that traders and market managers have failed to comply with fire safety measures. It is against this backdrop that this study seeks to assess fire safety management in Nigerian market: challenges faced by both traders and market management, and also evaluating the roles of relevant stakeholders in matters concerning fire safety and its management. A survey will be taken to markets in one states each of the six (6)

geopolitical zones to, appraise the designs adopted in the planning of markets, assess the types of materials used in the construction of these markets, determine the level of fire safety knowledge of the traders in the markets, determine the level of compliance with fire safety measures by both the traders and

management of the markets as stipulated in the Nigeria Fire Safety Code, evaluate the roles played by the relevant institutions in the management of market fires in Nigeria and examine problems which militate against effective management of market fires in Nigeria.



Fire Safety Group With Officials Of Kano State



Fire Safety Group With Management



Cross Section Of Markets In Kano State



## MODIFICATION OF EXISTING NBRRI SYSTEM DESIGN TO REDUCE MATERIAL WASTE AND HEAT LOSS: A CASE STUDY OF SOLAR COLLECTORS

Abu, A.S.P., Cinfwat, K.Z., Abdulmumin, M.M., Nden, T., and Siyanbola, I.

This study aims to develop a sustainable means of generating thermal energy for domestic application. In order to reduce energy consumption and enhance energy efficiency in building, this study improves the previous system schematics through the design, fabrication and performance evaluation of solar flat plate collector. Challenges observed in the previous study include heat loss through the backside, material waste during fabrication and inefficient measuring mechanism during testing phase; these

challenges will be mitigated through optimized system design integrated with microcontroller for monitoring & recording data and improved material selection to eliminate material waste in line with local content. The unique feature of the expected system is its' ability to work both as an active and passive system while eliminating the trial and error method typically employed in the fabrication of solar technology thus reducing cost associated with errors in improving higher energy gain.

# ROLES AND OBLIGATIONS OF ZONAL OFFICES IN BRINGING THE ACTIVITIES AND TECHNOLOGICAL INNOVATIONS OF NBRI TO THE GRASSROOTS



## 1.0 INTRODUCTION

The activities and technological innovations of the Nigerian Building and Road Research Institute (NBRI) have over the years made impact and brought socio-economic development to the Nation and its people.

NBRI technologies are community-based technologies which utilize locally sourced raw materials. These technologies are cost effective and utilize both skilled and unskilled labour.

NBRI technologies generate employment. Artisans and Stakeholders who are trained on these technologies acquire the technical skill and capacity to replicate what they have learned. By this individuals and communities are socio-economically empowered thereby alleviating poverty.

## 2.0 HISTORICAL BACKGROUND

### Historical Background of the Zonal Offices

Three Zonal Offices were set up in Lagos, Kano and Nnewi to bring NBRI technological innovations and services closer to the stakeholders and the grassroots. However, in 2006 the Federal Government directed the closure of these Zonal Offices as part of its reform agenda. This

left the Administrative Office in Abuja and the National Laboratory Complex at Ota as the two Operational basis of NBRI. As part of the effort of the present DG/CEO and Board of Directors of NBRI, the three Zonal Offices (Lagos, Kano and Nnewi) were revived and three additional Zonal Offices were created in Jos, Gombe, and Uyo in April 2011 and started operations in June 2013. This has helped in establishing the presence of NBRI in all six geo-political zones of Nigeria.

## 3.0 MANDATES OF THE ZONAL OFFICES

- I. Sensitization/Extension of NBRI technologies to the Citizens of Nigeria, especially within the Zones.
- II. Representing NBRI in relevant activities within the geo-political zone as it relates to the mandate of the Institute.
- III. Conduct training on NBRI Technologies and Artisan Trade to construction workers.
- IV. Collecting and collating data for NBRI Research and Development within the geo-political Zone.
- V. Establishing collaboration with Tertiary Institutions, Agencies, Organisations and Private Bodies within the Zone.
- VI. Promoting a good Corporate Image of the Institute in the Zone.
- VII. Generating bespoke research proposals that

relates to the mandate of the Institute within the Zones.

- VIII. Ensuring effective and adequate daily Coordination of NBRRI activities with Headquarter and all the other Zones in the Country.
- IX. Submitting monthly report of activities to the Head CES Department.
- X. Any other assignment that will be assigned.

**4.0 ROLES AND OBLIGATIONS OF THE ZONAL OFFICES IN ACHIEVING ITS MANDATE**

The broad responsibility of the Zonal Offices is primarily to bring the activities and several technological innovations of the Institute to the consciousness and awareness of Nigerians for adoption. To achieve this, the Zonal office will as part of its mandate conduct the following functions and programmes.

- 1. **Sensitization/Extension of NBRRI technologies:** The Jos Zonal Office has carried out sensitization campaign on the services and technological innovation of the institute to stakeholders in the building and road industry like the Plateau State Ministry of Housing and Urban Development, Plateau State Ministry of Works and Transport, Langtang Local Government of Plateau State, the Benue State Government and the Jos Building Materials Market. The Zonal Office has created conscious awareness of the Institute's services and technological innovations to Artisans and Craftsmen within the geo-political zone like the National Association of Engineering Craftsmen (NAEC). The Jos Zonal Office is also using the media, NAN, PRTVC, and AIT to project the activities of the Institute.
- 2. **Representing NBRRI in relevant activities within the geo-political zone as it relates to the mandate of the Institute:** The Jos Zonal Office has represented the Institute in the magazine lunch of the FRSC Jos Command. The Zonal Office has represented the Institute in the Annual General Meeting/Dinner of the Nigerian Institute of Architects and has also attended two inaugural lectures of two Professors of the University of Jos.
- 3. **Organize training workshop for artisans and other stakeholders in the geo-political Zone on NBRRI technologies:** The Jos Zonal Office has conducted a training workshop for Artisans and Craftsmen of the National Association of Engineering Craftsmen (NAEC). The Jos Zonal Office has also conducted training for Artisans and Craftsmen involved in the On-going NBRRI Projects in Plateau State on the Production of the NBRRI Interlocking Compressed Stabilized

Earth Blocks. This training has built the confidence of the artisans as they now have a strong understanding and responsibilities of their job. The technical skill and capacity acquired by these artisans will help them replicate and maintain similar projects thereby communities will be socio-economically empowered and poverty will be alleviated.

- 4. **Collecting and collation of data for NBRRI Research and Development with the geo-political Zone:** In September 2015, the research unit of the Jos Zonal Office was involved in collecting and collating samples and data from the site of a collapsed building at Abu Ni'ima Islamic School, Bukuru-Jos for laboratory test and report writing. The Research Officers and Higher Technical Officers also carried out a preliminary investigation of a collapsed building at Adebayo Street, Jos in July 2016. The Jos Zonal Office is also involved in carrying out Building Price Index in the Jos Building Materials Market.
- 5. **Establishing collaboration with Tertiary Institutions, Agencies, Organisations and Private Bodies within the Zone:** As part of Extension Service of the Institute and to also provide the Institute with feedback mechanism on her technologies in order to correct an anomaly, redesign the product or withdraw it from the market, the Jos Zonal Office has established collaboration with Tertiary institutions, Agencies, Organizations and Private Bodies within the Zone.

The Zonal Office has a working collaboration with the Plateau State Ministry of Housing and Urban Development, Plateau State Ministry of Works, Langtang Local Government of Plateau State, The Benue State Government, the National Association of Engineering Craftsmen (NAEC), Christian Rural and Urban Development Association of Nigeria (CRUDAN), the Civil Engineering, Architectural and Building Departments of the University of Jos. The Jos Zonal Office also has a working collaboration with the media (NAN, PRTVC, AIT) which help in projecting the activities of the Institute. Due to the collaboration with NAEC, NBRRI was able to train 60 Members of this association in the production and use of the NBRRI interlocking (CSEB). The Plateau State Ministry of Works have been participating in NBRRI activities especially the NBRRI International Conferences. There is an ongoing arrangement between the Institute and the Ministry to train Engineers and Technologist in the Ministry on Materials Testing. The collaboration with the University of Jos was very resourceful especially the

building collapse investigation in September 2015.

6. **Promoting good Corporate Image of the Institute in the Zone:** This helps in raising the profile of the Institute and creates opportunities to conduct advocacy and awareness creation programmes to the general public on the application of NBRI technologies in affordable housing delivery and construction of durable roads.
7. **Generating bespoke research proposals that relate to the mandate of the Institute within the Zones:** The Jos Zonal Office has generated research proposals which aim at formulating and implementing integrated research and development activities into varied aspects of the building construction industry and into problems of road and transport sectors of the economy.
8. **Effective and adequate daily Coordination of NBRI activities with Headquarter and all the other Zonal Offices in the Country.** The Jos Zonal Office has a smooth working relationship with the Headquarter and the other Zonal Offices.
9. **Submitting monthly report of activities to the head of CES Department:** As a matter of policy the Jos Zonal Office submits progress report of her activities to Head Consultancy and Extension Services to establish synergy with the Headquarters.
10. **Conduct traffic studies in the major cities**

**of the geo-political Zones:** Road safety is a global challenge as several million fatalities occur every year due to road accidents. Nigeria ranks second in road accident fatalities among the 193 Countries in the World. Hence the need to reduce this trend. The Jos Zonal Office is currently carrying out road safety audit of a section of the D. B. Zang expressway which has extreme occurrence of road traffic accident.

11. The Jos Zonal Office has hosted two BOT meetings.
12. The Jos Zonal Office in collaboration with the Headquarter is carrying out Supervision on the ongoing NBRI buildings and roads projects in Plateau State. The Zonal Office serves as feedback mechanism contacting the Headquarter on the anomaly of the machines on site and situation report of the ongoing project.

With the ongoing project initiated by the current DG/CEO, the laboratory and library complex in Jos, the Pozzolana Cement Plant and the skill acquisition centre at Bokkos when commissioned will further impact the North-Central Geo-Political Zone and Nation entirely in the area of capacity building, sustainable infrastructure development, poverty reduction, employment generation, reduction in rural-urban migration, improve accessibility, housing and environmental conditions.

*By: Terver Tyosar, Timothy Danjuma, Mbimda Ali Mbishida, Yakubu Isheni and Maude Ephraim Haruna of the Jos Zonal Office.*

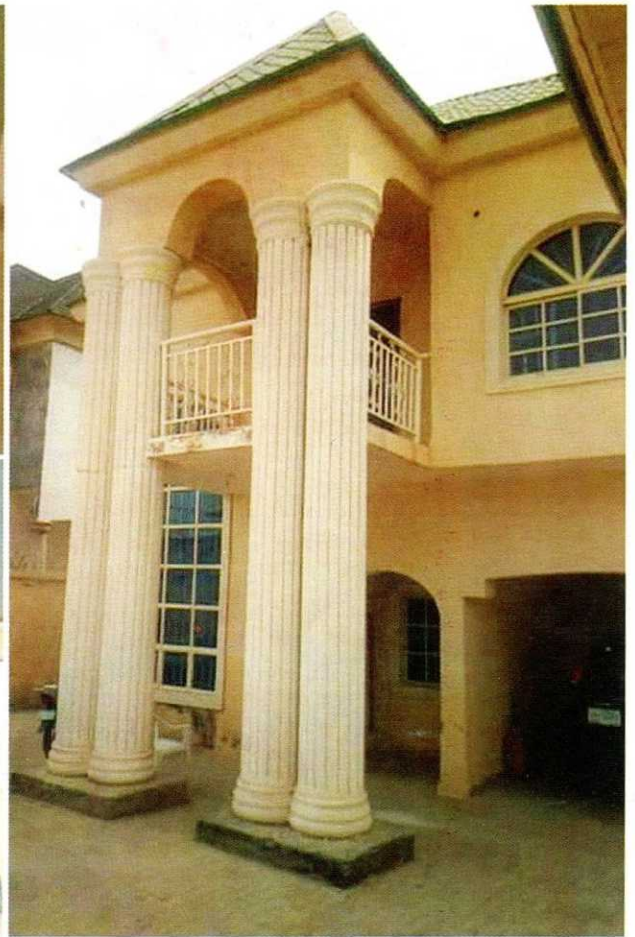
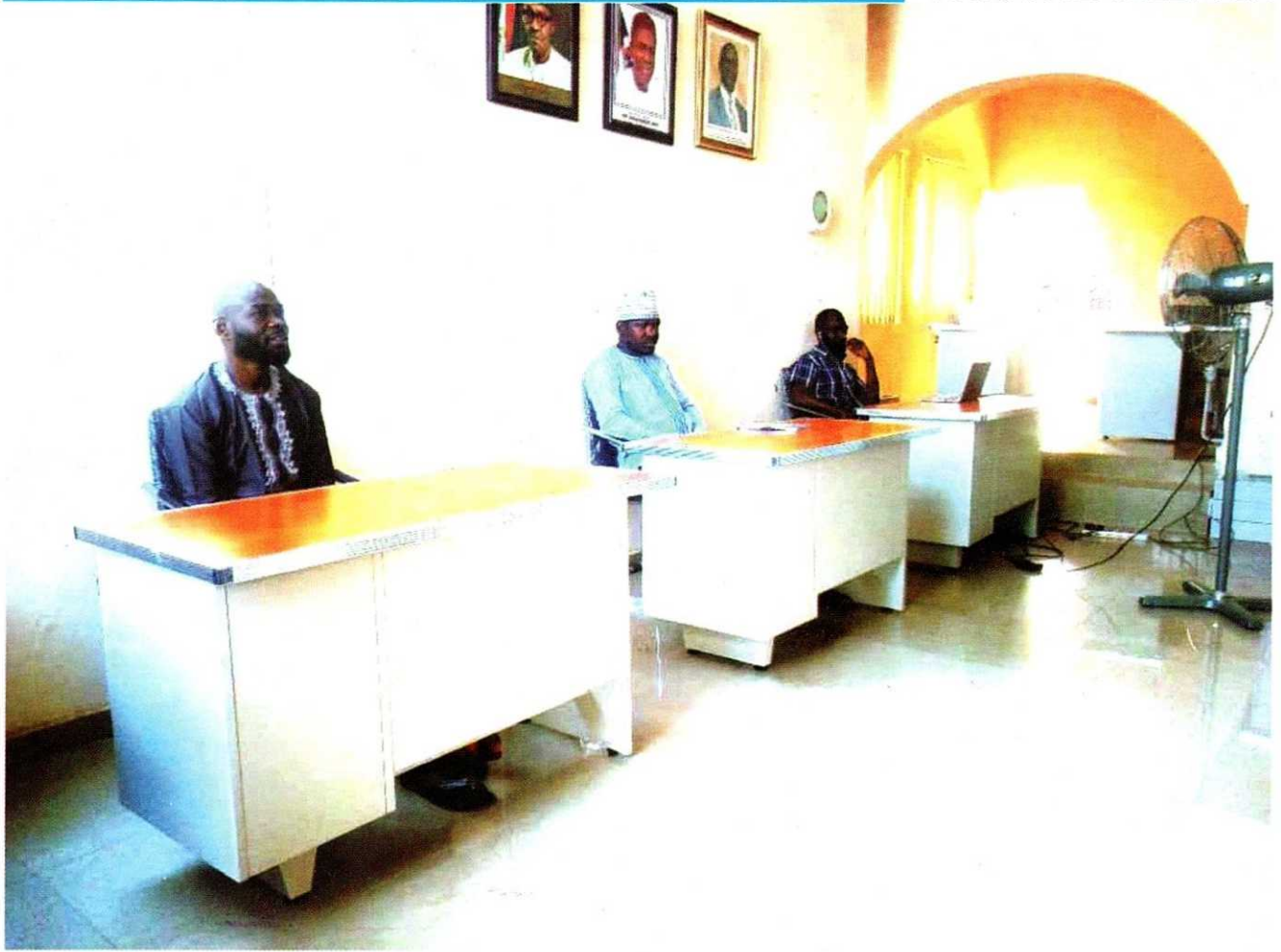


# GOMBE ZONAL OFFICE RELOCATES...

## Gets New Furnitures

The NBRRI North East Zonal office in Gombe has relocated to Alabura S/Kudi Street opposite State Ministry of Education, New GRA, Gombe. The office was previously at Shanu road (off Bauchi road) GRA, Gombe. Meantime the office has received new seats and tables for a more working environment of the staff. Head of the Zonal office, Baba Yerima in a telephone chat with the NBBRI Newsletter crew thanked the DG/ CEO of the Institute, Prof. D.S Matawal and management was the gesture.





# Update On The New NBRRI Office Complex Abuja

Work is ongoing at the newly acquired 4 storey edifice that will serve as the Headquarters of the Nigerian Building and Road Research Institute, NBRRI Abuja. Here are pictures on the progress of work being carried out at the complex







## BIRTHDAYS

NAMES	DATE OF BIRTH	DEPT.
Tejumade O.A	1 <sup>st</sup> Jan	RRD
Surajo L. Abdullahi	1 <sup>st</sup> Jan	CES
OlutayoAindeOyedapo	1 <sup>st</sup> Jan	A/F
Nwasha M. J	2 <sup>nd</sup> Jan	A/F
Amos Tabe	2 <sup>nd</sup> Jan	A/F
TsamiyaSani	3 <sup>rd</sup> Jan	CES
KadiriZulukifilu O.	3 <sup>rd</sup> Jan	BRD
IsahSaliuDantala	4 <sup>th</sup> Jan	CES
Abu Aminu	4 <sup>th</sup> Jan	A/F
Abah Godwin	5 <sup>th</sup> Jan	A/F
Haruna D. Israel	6 <sup>th</sup> Jan	PIT
UgoUkawbasi	10 <sup>th</sup> Jan	RRD
Sanni Reuben	10 <sup>th</sup> Jan	RRD
OyadosuS. A	11 <sup>th</sup> Jan	EMRD
Egbuna Ikechukwu	13 <sup>th</sup> Jan	EMRD
Stephen Okpah	15 <sup>th</sup> Jan	A/F
Ojenike Lawrence A.	15 <sup>th</sup> Jan	A/F
Igwe Rowland	18 <sup>th</sup> Jan	BRD
Adio Fatimah F.	23 <sup>rd</sup> Jan	RRD
Akinlade S. James	25 <sup>th</sup> Jan	CES
Oneshi Umoche	26 <sup>th</sup> Jan	PIT
Ganiyu Lawal	27 <sup>th</sup> Jan	CEO
Karfe Seth Gayus	30 <sup>th</sup> Jan	EMRD
Alozie Darlington E.	1 <sup>st</sup> Feb.	A/F
Jude-Iloma I. E.	1 <sup>st</sup> Feb	A/F
EdiboJibrin	2 <sup>nd</sup> Feb	A/F
KadiriAbdullahi	2 <sup>nd</sup> Feb	A/F
Okunoghae Reuben	2 <sup>nd</sup> Feb.	EMRD
AdeyemiL. Josephine	2 <sup>nd</sup> Feb.	PIT
Etuchere Prisca O.	2 <sup>nd</sup> Feb	CES
AdeyanjuTunde M.	3 <sup>rd</sup> Feb	PIT
Adeyemi James	3 <sup>rd</sup> Feb	CES
Fawolu Henry A	8 <sup>th</sup> Jan	BRD
SosanyaOluwatoyin	9 <sup>th</sup> Feb	PIT
Maton John Dafang	10 <sup>th</sup> Feb	BRD
Danjuma Hassan U	13 <sup>th</sup> Feb	CES
Okwunze C. Felix	13 <sup>th</sup> Feb.	BRD
Babalola O. Toluwalaju	14 <sup>th</sup> Feb	EMRD
Musa Dimas Bala	14 <sup>th</sup> Feb	RRD
AdemolaOlukorede E.	16 <sup>th</sup> Feb	A/F
Emore R. A.	17 <sup>th</sup> Feb	A/F

# SOCIAL DIARY

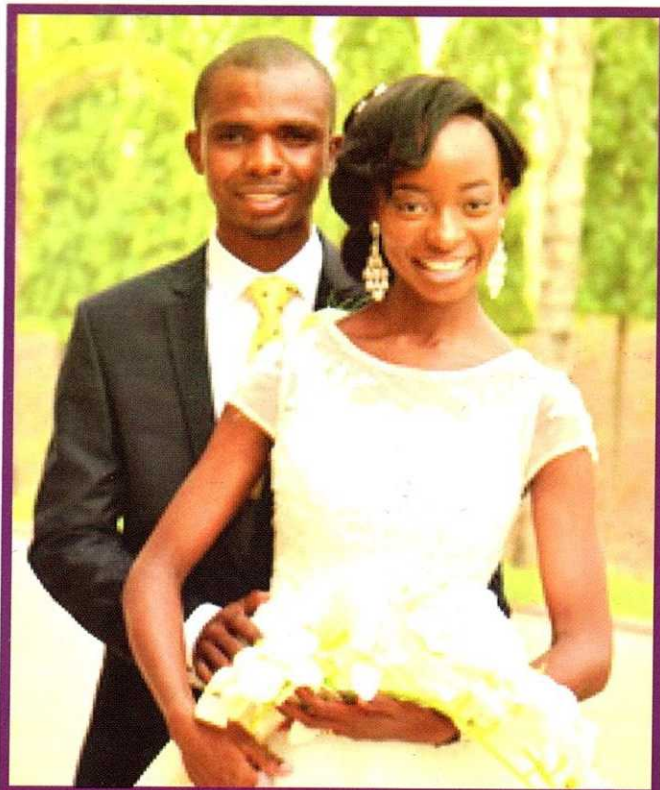
Emole Charles	18 <sup>th</sup> Feb.	A/F
Ima-Ima Amos	18 <sup>th</sup> Feb	CES
Olaife O. Adebayo	19 <sup>th</sup> Feb.	EMRD
Makava O. Richard	21 <sup>st</sup> Feb	PIT
Hannah AilekuAyedime	22 <sup>nd</sup> Feb	A/F
TyosaTerver Elijah	24 <sup>th</sup> Feb	CES
Edeh Blessing O.	26 <sup>th</sup> Feb	A/F
YakubuNda Umar	27 <sup>th</sup> Feb	A/F
C.C. Osadebe (Dr.)	28 <sup>th</sup> Feb.	RRD
OgundolaTemitope M.	28 <sup>th</sup> Feb	BRD
Udenyi Anthony Wonah	4 <sup>th</sup> Mar	A/f
Makwin Heiman Luke	4 <sup>th</sup> Mar	RRD
AfolabiOlakunle M.	9 <sup>th</sup> Mar	A/F
Arabi Kehinde Paul	10 <sup>th</sup> Mar	PIT
Anthonia Robert	11 <sup>th</sup> Mar	A/F
Kareem Y.O	12 <sup>th</sup> Mar	CES
IyajiJ Monday	12 <sup>th</sup> Mar	EMRD
Abimiku Yohanna	14 <sup>th</sup> Mar	SLT
Egbo Gerry Nnamdi	15 <sup>th</sup> Mar	BRD
Igwe Stanley	15 <sup>th</sup> Mar	CES
Abubakar Musa Yola	15 <sup>th</sup> Mar	RRD
Idu E. Abraham	16 <sup>th</sup> Mar	PPM
Faboro O. P	16 <sup>th</sup> Mar	RRD
Onuche Samuel Ataguba	17 <sup>th</sup> Mar	RRD
Oludare Samuel Olu	17 <sup>th</sup> Mar	A/F
Barr. Oyeleye Daniel O.	19 <sup>th</sup> Mar	CEO
Abdulrasheed Bashir	19 <sup>th</sup> Mar	RRD
Mohammed Ahmed K.	23 <sup>rd</sup> Mar	RRD
Akpan Smart John	24 <sup>th</sup> Mar	CES
AbdullahiAliyu	24 <sup>th</sup> Mar	CES
AminuMomoh	27 <sup>th</sup> Mar	EMRD
Dauda Yusuf Waziri	27 <sup>th</sup> Mar	EMRD
Asade B. E.	27 <sup>th</sup> Mar	A/F
Ahmed Yushau Ibrahim	27 <sup>th</sup> Mar	CES
Prince AminuMomoh	27 <sup>th</sup> Mar	EMRD
Iruobi E. O	28 <sup>th</sup> Mar	A/F
Ajah Boniface Audu	29 <sup>th</sup> Mar	A/F
Atapku O. Dennis	29 <sup>th</sup> Mar	EMRD
AmobiUchenna N	30 <sup>th</sup> Mar	PIT
Emmanuel Sarah D.	30 <sup>th</sup> Mar	DGs office
OgunladeOlajide S.	30 <sup>th</sup> Mar	EMRD

# SOCIAL DIARY

## WEDDINGS



Frank Obiora of Road Research Dept married former Dr. Ifeoma Jane Nwigwe on Jan 3th, 2018



Former Miss. Rebecca Magaji of A/F, Abuja got wedded to Mr. Innocent Sunday Ujata on March 31st, 2018 in Abuja.

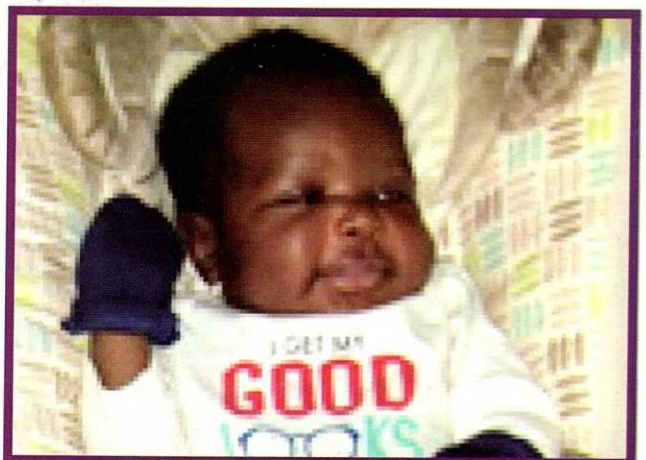
## BIRTHS



Emmanuel Eyibio Asuquo born on 9th January 2018 to the family of Mr. Asuquo Eyibio Asuquo of SLTRD Ota



Bwefuk Valerie Bass Juku, born on 19th February 2018 to the family of Mrs. Uham Danshak Bass of PIT Abuja



Aasiel Onose Majiyebosoko, born on 12th March 2018 to Mrs Ayedime Patience Jerome of CES Abuja



**NIGERIAN BUILDING &  
ROAD RESEARCH INSTITUTE,**

Federal Ministry of Science and Technology, FMST



*Felicitation*

# 2018 NBRRI INTERNATIONAL CONFERENCE

with **THEME:**

**SUSTAINABLE DEVELOPMENT GOALS (SDGs) AND  
THE NIGERIAN CONSTRUCTION INDUSTRY  
- CHALLENGES AND THE WAY FORWARD**

**GUEST OF HONOUR**

**Dr. Ogonnaya Onu**  
Hon. Minister, FMST

**SPECIAL GUEST**

**Boss Gida Mustapha**  
Sec. to the Govt. of the Federation

**CHIEF HOST:**

**Dr. Amina M. Bello Shamaki**  
PERM SEC. FMST

**HOST**

**Prof. Danladi S. Matawal**  
DG/CEO NBRRI (HOST)

**VENUE:**

**NAF CONFERENCE CENTRE,  
KADO, JAHI DISTRICT, Abuja.**

**DATE:**

**12-14 JUNE 2018**

**TIME**

**9:00AM**