



 **REPORT**

 **ON**

**THE ACTIVITIES OF THE CENTRE FOR NUCLEAR**

**ENERGY STUDIES (CNES)**

**UNIVERSITY OF PORT HARCOURT**

**EAST-WEST ROAD, CHOBA, PMB 5323**

**PORT HARCOURT, NIGERIA**

**BRIEF HISTORY**

As you are probably aware, the Centre for Nuclear Energy Studies (CNES) was established in 2009 by the Federal Government of Nigeria, and got approval in 2010 to run as a centre of excellence in nuclear energy research and training under the auspices of the Nigeria atomic energy commission (NAEC). It is located at the University of Port Harcourt, Port Harcourt in the South-South geopolitical zone of Nigeria.

**OUR VISION**

The centre shall through teaching and research become a leading nuclear technology centre of excellence in the country and indeed the world attracting best brains in both staff and students through effective collaborations, and providing practicable solutions to the peaceful utilization of nuclear energy.

**MISSION STATEMENT**

The following are our mission statements:

1. Produce human capital with skills to optimally deploy nuclear technology in power generation, radiation protection and other peaceful applications.
2. Harness human and physical resources in a most efficient manner towards advancement of nuclear technology.
3. Co-operate and partner with other nuclear research organizations (locally and internationally) for training and research towards exploitation of nuclear energy.
4. Apply international best practices and procedures for advancing knowledge in nuclear science and technology, and for harnessing nuclear energy to solving local and external problems.
5. Bridge the gap between the nuclear knowledge acquired at the University and that of the industry through exchange and linkage programmes

**STATUS OF FACILITIES**

CNES currently has three buildings: Thermal Hydraulic Laboratory, Nuclear Science and Engineering Laboratory and Researchers Hostel. The CNES has taken possession of the Thermal Hydraulic Laboratory and Nuclear Science and Engineering Laboratory for use as office accommodation and teaching purposes. The two laboratories has officially been handed over to the University by NAEC but both laboratories are yet to be equipped. The Researchers hostel which is designed to accommodate students and visiting staff of the centre has been completed, partly furnished but not yet commissioned.

**ACADEMIC PROGRAMMES**

In line with our mandates to build capacity in nuclear education through training and research, CNES commenced the admission of two batches of students for Master of Engineering (Nuclear Engineering) programme in 2011/2012. The CNES also admitted four sets of students for the Postgraduate Certificate programme in Nuclear Security Science (PGC-NSS) in the 2016/2017, 2017/2018, 2018/2019 and 2020/2021 academic sessions. The Academic Committee of CNES has given approval to recommence the M.ENG (Nuclear Engineering) programme in 2021/2022 academic session. The advert for suitably qualified candidates into the PGC-NSS Batch 6 admission is currently in progress.

**NUMBER OF GRADUATED STUDENTS**

M.ENG (Nuclear Engineering) = 13

PGC-NSS = 19

PGC-NSS (In view) 2021/2022 = 6

 **ADMISSION INTO PGC-NSS FOR 2022/2023**

 Admission of candidates into the PGC-NSS for 2022/2023 is in progress

**RESEARCH AND TRAINING FOCUS**

Basically, CNES has four major areas of research and training interest:

1. Nuclear Safety and Security
2. Nuclear Thermal Hydraulics
3. Radiation Measurement and Protection
4. Radiation Waste Management and Processing

 **LABORATORY**

1. Thermal Hydraulic
2. Instrumentation
3. Nuclear safety and Security
4. Reactor dynamic
5. Simulation

**PARTNERSHIP AGREEMENT WITH NAEC**

CNES secured partnership with NAEC to co-run the PGC-NSS programme for three academic sessions i.e. 2017/2018, 2018/2019 and 2019/2020.

**SEMINARS AND WORKSHOPS**

The centre has organized and hosted two National Workshops/Training on Nuclear Security. The first was held at the Thermal Hydraulic Laboratory, CNES, and University of Port Harcourt from January 12-16, 2015.

The second was held at Conference Hall, Researchers’ hostel and Conference centre, Nuclear Technology Centre, Sheda Science and Technology Complex (SCHESTCO), Sheda, Along Abuja-Lokoja Expressway, Abuja from March 14-18, 2016

The centre collaborated with Exchange and Linkage Programme Unit (ELPU) University of Port Harcourt and Network for Nuclear Science and Technology Education (NGA-NEST) Abuja, for Career Talk/Workshop on the Peaceful Uses of Nuclear Energy for Public and Private Secondary Schools in Rivers State. It was held at the International Student Centre, University of Port Harcourt, Port Harcourt from June 11-12, 2019.

The CNES participated in the Nigeria’s Nuclear Security: Establishing the Human Reliability Programme held at Sheraton Hotel, Abuja from 16-18th September, 2019. The implementer of Workshop was the Office of the National Security Adviser, Abuja, Nigeria.

The centre was also invited by the Nigerian Nuclear Regulatory Authority (NNRA) to the Stakeholder’s’ Technical Meeting to Review the draft Nigerian Safety Regulations on Design and Construction of Nuclear Power Plants held at Reinz Continental Hotel, Abuja from September 24th – 26th , 2019. The CNES also participated in the following workshops held recently:

1. Sustaining Nuclear Security at Decommissioning Sites Workshop, for

 Science & Security Studies, King’s College, London 12th – 14th

 October, 2021

 19th INPRO Dialogue Forum on Enhancing Public Acceptance of Nuclear Energy

 Through Institutional Innovations (Virtual Event IAEA 7-10 December, 2021

1. Review of Draft Nigerian Regulations for Decommissioning of

 Nuclear Power Plants: Nigerian Nuclear Regulatory Authority, March

 2022

1. National workshop on integrating Nuclear Techniques for the

 Remediation of Plastic pollution in Nigeria, NTC, Sheda, Abuja, 21st -

 24th February, 2022

 (d) Workshop on Fundamentals of Physical Protection, Centre for Science

 & Security Studies, King’s College, London, 27th February – 4th March,

 (e) Workshop on Budget Implementation Appraisal for NAEC’S National

 Nuclear Energy Programmes and 2022 Procurement Planning and

 Projections. Nicon Luxury Hotel Area 11, Garki, Abuja. April 25, 2022

1. Technical meeting on the Business development plan for the proposed Multipurpose Research Reactor for Nigeria, October 24-27, 2022, NTC, Sheda, Abuja.
2. Workshop/Training on proposal writing and Grant Management (Grantsmanship) for staff of NAEC Centres and Directorates, 15-17 November, 2022, NTC, Sheda, Abuja.

  **STAFF STRENGHT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  **S/NO** | **NAME** | **DESIGNATION** | **GRADE LEVEL** | **REMARKS** |
| 1 | Prof Benson O. Evbuomwan  | Director | CONUASS 7 | Uniport Staff |
| 2 | Prof. Franklin E. Osaisai | Industry/ Research Professor | - | Uniport Staff |
| 3 | Mrs Furo Ebiere Eritei |  Chief Computer Programmer | 12 | NAEC |
| 4 |  Engr. Domotimi Leghemo |  Chief Scientific Officer | 12 | **NAEC** |
| 5 | Mrs Akpanigolo Gesifere | Asst. Chief Accountant | 11 | NAEC |
| 6 | Engr. Kingsley Nyeche Amadi | Asst. Chief Scientific Officer  | 11 | NAEC |
| 7 | Miss Emilia I. Udom | Principal Admin. Officer | 10 | NAEC |
| 8 | Mrs. Edward Elizabeth Nneka | Assistant Chief Scientific Officer | 11 | NAEC |
| 9 | Mr. Allen. W. Ekubo | Principal Scientific Officer | 10 | NAEC |
| 10 | Mr Chukwudi Afamefula Samuel | Research Fellow I | 10 | NAEC |
| 11 | Mr Iboroma T. Korubo-Owiye | Research Fellow I | 10 | NAEC |
| 12 | Mr. Akpuluma Akpoebi David | Research Fellow I | 10 | NAEC(Study Leave) |
| 13 | Mr. Ebikella Domor Mienye | Principal Accountant | 10 | NAEC |
| 14 | Mr Fawei Tuatai James | Senior Scientific Officer  | 9 | NAEC |
| 15 | Mr. Olatubosun Samuel Abiodun | Scientific Officer I | 8 | NAEC(Study Leave) |
| 16 | Mr. Alaide Muritala | Scientific Officer I | 8 | NAEC(Study Leave) |
| 17 | Mr. Ogbonnaya Gabriel  | Scientific Officer I | 8 | NAEC |
| 18 | Mr. Anyamaobi Nwankwo Pius | Scientific Officer II | 7 | NAEC(Study Leave) |
| 19 | Mrs Esther C. Ekwueme | Personal Secretary II | 9 | Uniport |
| 20 | Mr Iroegbu Thankgod Ndidi | Scientific Officer II | 7 | NAEC |
| 21 | Mr. Tunde Adeyemi | Senior Motor Mechanic | 4 | NAEC |
| 22 | Mr. Justice Wahia | Clerical Officer II | 3 | NAEC |
| 23 | Mrs. Charity Owhorji | Clerical Officer II | 3 | NAEC |
| 24 | Mr. Darlington Ogbuehi | Clerical Officer II | 3 | NAEC |

 **STAFF DEVELOPMENT**

Six staff members were granted approvals of study leave with pay to pursue Masters and PhD programmes in Nuclear Engineering and Thermal physics in Russia and China.

Also, two staff members has completed their PhD (Nuclear Engineering) Degree from Harbin Engineering University, Harbin, People Republic of China (PRC) and Kyung Hee University, Seoul, Korea.

**PhD DISSERTATION**

1. Improvement and extension of classical wall heat flux portioning model to fully developed nucleat boiling
2. Dependency Consideration of Thermal-hydraulic Reliability of Passive Systems in Advanced Reactors

**POSTDOC/INTERSHIP/FELLOWSHIP PROGRAMME IN NUCLEAR ENGINEERING**

Two staff members from CNES were granted permission for the above programme.

**INSTALLATION AND TRAINING ON YAFI TARINING RADIATOR PORTABLE MONITOR TRM-YB01.06**

The Open Joint Company OJSC Scientific Engineering Centre, Russian Federation held training sessions with some staff members from March 18-19th, 2020. The training was held virtually.

**WINS ACADEMY AMBASSADOR PROGRAMME**

I am happy to inform you that my female CNES staff was one of the chosen 20 men and 20 women as WINS Academy Ambassador. Her new role as WINS Academy Ambassador was supported by the immediate past Ag, Chairman, NAEC. The link to her announcement on WINS Website is

[*https://wins.org/meet-a-new-wins-academy-ambassador-edward-nneka-elizabeth/*](https://wins.org/meet-a-new-wins-academy-ambassador-edward-nneka-elizabeth/)

**SOURCES OF ACADEMIC STAFF**

The centre sources its quality resource persons from within and outside the University of Port Harcourt and from the Industry.

**EVIDENCE OF EMPLOYABILITY OF GRADUATES**

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| **S/NO** | **NAME** | **EMPLOYER** |
| 1 | Peter Andrew | Nigeria Police Force |
| 2 | Otunomo Festus. A | Nigerian Nuclear Regulatory Authority (NNRA) |
| 3 | Sala Lazarus | NNRA |
| 4 | Furo Ebiere | NAEC |
| 5 | Salihu Nafiu | Nigeria Custom Service |
| 6 | Amidu M. Alade | NAEC |
| 7 | Olatubosun S. Abiodun | NAEC |
| 8 | Chinedu Ohaez | FAAN, Lagos |
| 9 | Patrick Solomons | NNRA |
| 10 | Olaobaju Afolake | NNRA |

**SUPPORT FROM IAEA**

 The IAEA has donated set of detection equipment and reference sources to support CNES activities in nuclear security especially, the senate approved PGC programme in Nuclear security. Some of the equipment are:

1. Training Radiation Portal Monitor
2. Personal Radiation Detector
3. Radioisotope Identifier Device
4. Radiation Reference Sealed Sources

**COLLABORATIONS WITH OTHER INSTITUTIONS**

The centre has collaborated with several institutes, most of which are:

1. Centre for Energy Research and Training (CERT, Zaria, Kaduna State)
2. Nuclear Technology Centre (NTC), Sheda, Abuja
3. Network for Nuclear Science and Technology Education (NGA-NEST) Abuja
4. Exchange and linkage Programme Unit (ELPU), University of Port Harcourt, Port Harcourt
5. Texas A&M University, Department of Nuclear Engineering, USA
6. ROSATOM, Russia
7. University of Tennessee, Department of Nuclear Security, USA
8. Partnership for Nuclear Security, USA

**CNES ACHIEVEMENTS**

 The CNES has achieved the following:

1. Developed and facilitate the approvals of academic curricula for B.ENG and PhD Degree programmes in nuclear engineering at the University of Port Harcourt.
2. Graduated the first and second sets of M.ENG (Nuclear Engineering) students in Nigeria.
3. Published its research works in many International journals.
4. Trained over 50 Nigerians through its national workshops on nuclear security.
5. Graduated the four sets of postgraduate certificate in nuclear security science students in Nigeria during the 2016/2017 and 2017/2018, 2018/2019 and 2020/2021 academic sessions.
6. First centre to win INSEN E-Learning Challenge competition in Nigeria (2020)
7. CNES female staff was chosen among the 20 females as WINS Academy Ambassador in 2020

 **SENATE APPROVED ACADEMIC PROGRAMMES**

1. Postgraduate Certificate in Nuclear Security Science (PGC-NSS)
2. Bachelor of Engineering in Nuclear Engineering (B.ENG, NUE)
3. Master of Engineering in Nuclear Engineering (M.ENG, NUE)
4. Doctor of Philosophy in Nuclear Engineering (PhD, NUE)

**FUTURE PLANS**

1. Recommencement of our M.ENG (Nuclear Engineering) Programme
2. Commencement of PhD (Nuclear Engineering) Programme
3. Integration of CNES Staff into the University of Port Harcourt
4. Establish more presence in International workshops and conferences for nuclear science, technology, engineering and related fields
5. Set up collaborative Research unit in nuclear science and engineering
6. Run distant learning programmes in nuclear science and engineering
7. Set up result oriented consultancy units to address industrial need
8. Setup a Business unit to generate fund
9. Training of staff in different areas e.g. Reactor dynamics

**CHALLENGES**

There are some challenges hindering our future plans as stated below:

1. Equipment to support our M.ENG, PhD and implementation of B.ENG degree programmes
2. E-Learning classroom for online courses
3. Landscaping of the Centre
4. Computers and Printers to the computer room
5. Internet/Library facilities
6. Renovation of the Thermal hydraulic laboratory

**CONCLUSION**

It is our wish to carry and uplift the mandate of CNES as given to it by the Federal Government of Nigeria by vigorously pursuing the CNES vision and mission statements, so that CNES can become centre of excellence in nuclear education, research and training.