PROGRESS AND CHALLENGES ASSOCIATED WITH THE NNP HUMAN RESOURCES PLANNING

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OUTLINE

- INTRODUCTION
- HUMAN RESOURCE DEVELOPMENT PLAN
  - ASSOCIATED PROBLEM
  - PLAN TO ADDRESS PROBLEMS
- BACHELORS NUCLEAR PROGRAM
- CONCLUSION
INTRODUCTION: NIGERIA

Population: 216.7 million.
Land Mass: 923,768 Km2
Tribes: 371
Languages: 723
Establishment & Activation of NAEC

Created by Act 46 of 1976 but was not activated

Established as the national focal agency responsible for the promotion of atomic energy and all matters relating to the peaceful use of atomic energy in Nigeria

Was activated and became fully operational in July, 2006 under the aegis of the Federal Ministry of Science and Technology

Was restructured and reconstituted in March 2011 to operate under the Presidency

The commission is headed by a Chairman/CEO and has three directorates
OBJECTIVE OF THE NUCLEAR ENERGY PROGRAMME

To explore, exploit and harness nuclear energy for peaceful applications in all its ramifications for the socioeconomic development of Nigeria.

✓ In the areas of electricity generation, food and agriculture, human health, water resources management, etc.

✓ In conformity with the developmental policies of the Federal Government and the scientific and technical assistance through partnerships with both national and international agencies such as the IAEA and AFRA.
The commission has six University based research centre

- Center for Energy Research and Training, Ahmadu Bello University, Zaria - 1978
- Center for Energy Research and Development, Obafemi Awolowo University -1978
- Nuclear Technology Center (NTC), University of Abuja -1995
- Center for Nuclear Energy Research and Training, University of Maiduguri -2011
- Center for Nuclear Energy Studies, University of Port Harcourt -2011
- Center for Nuclear Energy Studies, Federal University Technology, Owerri -2011
- FGN-IAEA Marine Contamination coastal Field Monitoring Station, Koluoma
Some Facilities within NAEC

- Nigeria Research Reactor-1 and Ancillary Facilities - CERT
- Tandem Accelerator and Ancillary Facilities - CERD
- Gamma Irradiation Facility - NTC
- Radioactive Waste Management Facility for temporary storage DSRS - CERT
- Modern Electro-Mechanical Workshops – CERD, CERT, NTC
- Health Physics and Dosimetry Laboratory – CERT
- Nuclear Instrumentation Laboratories – CERT, CERD, NTC
- Various Nuclear Science and Engineering Laboratories under development
- Liquid Nitrogen Plant – CERD, CERT, NTC
- Various Facilities for Atomic and Nuclear Spectroscopy
- Nuclear Safety and Security Laboratories
The Nigerian Nuclear Energy Programme is characterized by the following:

✓ Lack of adequate number of nuclear professionals.
✓ An aging workforce.
✓ Lack of interest in taking up career in the nuclear industry by the young generation.
Critical to the successful implementation of the Nuclear Energy Programme is:

✓ Availability of human resources development through research, education and training.

✓ Cooperation and partnership between key players (Bilateral cooperation with other States, international agencies such as the IAEA, Agreements such as AFRA etc)
Human Resource Development Programme

To Ensure a Pool of Young Indigenous Nuclear Scientists and Engineers for the Enhancement of Technology Localization/Domestication

Core Areas of Partnership

ON SHORE

- Nuclear Bridging Programmes
- Masters degree Programmes with Participating National Universities
- National Workshops and Training Courses

OFF SHORE

- AFRA
- IAEA
- WINS
- WNU
- CHINA
- GHANA
- KOREA
- RUSSIA
- USA

Bilateral & Multilateral co-operations

20th INPRO Dialogue, 27-31 March 2023, Oak Ridge, US
Nuclear HRD - National Nuclear Institutions

- CENTRE FOR ENERGY RESEARCH AND TRAINING CERT, Zaria (1978)
- CENTRE FOR ENERGY RESEARCH AND DEVELOPMENT CERD, Ile-Ife (1978)
- NUCLEAR TECHNOLOGY CENTRE NTC, Sheda (1995)

- CENTRE FOR NUCLEAR ENERGY RESEARCH & TRAINING CNERT, Maiduguri (2011)
- CENTRE FOR NUCLEAR ENERGY STUDIES CNES Port Harcourt (2011)
- CENTRE FOR NUCLEAR ENERGY STUDIES AND TRAINING Owerri (2011)
- FGN-IAEA MARINE COMTAMINATION COASTAL FIELD MONITORING STATION FMPCMS, Koluoma (2011)

Fully Operational

Partially Operational

NNRA Centre

NIRPR, Ibadan (2006)

20th INPRO Dialogue, 27-31 March 2023, Oak Ridge, US
HRD – Implementation

HRD Plan

- Developed a National HRD plan in line with the workforce requirements of the national NPP programme and building of requisite facilities.

Implementation

- Successful implementation of 3-Month Bridging Programme; Graduation of 35 Masters’ degree students in Nuclear Engineering & Nuclear Science; A number of Staff currently undergoing M.Sc. & Ph.D. studies Overseas.

Curricula & programmes

- Development, validation, approval and implementation of curricula for various undergraduate, professional and graduate degree programmes in Nuclear Science and Nuclear Engineering in partnership with selected Nigerian Universities.
• 50 graduates in Nuclear Science (NS) and Nuclear Engineering (NE)

• 61 Nigerians (36 Masters & 25 PhDs) who are currently undergoing graduate programmes outside the country (through AFRA Fellowship, IAEA Fellowships and bilateral relations)

• Current staff strength
  52 PhD
  99 MSc
  296 BSc/HND

• Training manual which includes training for safety assessment has been developed by the NNRA

• Adequate training and re-training of regulatory personnel is ongoing (on-shore & off-shore)

• The NNRA has developed a draft IMS which has been sent to all relevant stakeholders

• Central Nuclear Technology Training Facility (CNTTF) is being established at the Nuclear Technology Centre (NTC) in preparation for Phase 3

• Plans for the enhancement of licensing capacity is reflected in the MoU's between NNRA & NRC, NNRA & PNRA, while an MoU between NNRA & Russia Regulatory Authority (Rostechnadzor) is in progress.

Update on HRD

Human Resource & Capacity Development

20th INPRO Dialogue, 27-31 March 2023, Oak Ridge, US
## HRD – Mapping

<table>
<thead>
<tr>
<th>Organization</th>
<th>Role</th>
<th>Functions</th>
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<tbody>
<tr>
<td>NAEC</td>
<td>Nuclear Energy Programme Implementation Organization (NEPIO)</td>
<td>Coordination/development of NPP</td>
</tr>
<tr>
<td>NNRA</td>
<td>Regulatory Body</td>
<td>Licensing/Regulation</td>
</tr>
<tr>
<td>Energy Commission of Nigeria</td>
<td>Policy Direction</td>
<td>Energy Forecast and Policy Development</td>
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<tr>
<td>National Educational Institutions</td>
<td>Develop Education and Training Programmes</td>
<td>Implement Degree Programmes and Vocational Training</td>
</tr>
<tr>
<td>NERCs</td>
<td>Technical Support Organizations</td>
<td>Training and Research</td>
</tr>
<tr>
<td>NEMA</td>
<td>Emergency Management</td>
<td>Nuclear Emergency Response</td>
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</tbody>
</table>
TRAINING COLLABORATIONS

NATIONAL:

✓ Ahmadu Bello University Zaria
✓ Obafemi Awolowo University Ile-Ife
✓ University of Maiduguri
✓ University of Port Harcourt
✓ Federal University of Technology Owerri
✓ University of Abuja
### ACHIEVEMENTS

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<td><strong>64</strong></td>
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<td><strong>95</strong></td>
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- Some Senior academic staff of Nigerian universities have also benefited from Scientific visits with the intent to gain experience to run nuclear education programmes in the country.
SUMMARIZING THE ACHIEVEMENTS

• From the year 2014 to 2023, a total of 95 staff have secured admission into foreign universities.
• The breakdown shows that 64 were admitted into MSc programmes, while 31 were admitted into PhD programmes.
• Appraisal of the yearly intake shows approximately 11 staff per year.
• At this rate it will take about 181 years to train the required number of nuclear professionals (2000) for the Nigeria Nuclear Energy Programme.

• In the light of the above, it has become imperative to expedite action to:
  ✓ implement nuclear education programmes in national universities to increase the output of nuclear graduates.
  ✓ sought for training/fellowship for staff in nuclear facilities/projects and other areas of non-power nuclear applications.
10 Universities were selected to start programs in two areas:
  - B.Sc. Nuclear Science
  - B.Sc. Nuclear Engineering

To graduate 2000 Nuclear Scientists in 10 years
A draft Curriculum is ready courtesy of NAEC and NUC
Awaiting final review that is CCMAS compliant
CONCLUSION

To develop the required pipeline of specialists to sustain the implementation of national nuclear programmes, emphasis need to be placed on:

- collaborations for development of educational programmes & training programmes
- enhancement of education & training infrastructure
- interface between academics and industrial needs in the nuclear sector
AND TO ALL OF YOU HERE, I THANK YOU FOR YOUR ATTENTION