Article II:

The Agency shall seek to accelerate and enlarge the contribution of atomic energy to peace, health and prosperity throughout the world. It shall ensure, so far as it is able, that assistance provided by it or at its request or under its supervision or control is not used in such a way as to further any military purpose.

IAEA
NKM Programme Objectives

- to increase Member State understanding and application of nuclear knowledge management
  - development and dissemination of methodology, guidance and tools
  - implementation in national nuclear programmes
- providing knowledge management services and assistance

Facilitating sustainable nuclear education

Nuclear Energy Management (NEM) Schools
- 5th NEM School at ICTP in Trieste, Italy – Nov. 2014
- 3rd NEM School at U of Tokyo, Japan – June 2014
- Since 2010 trained over 150 nuclear lower or middle level managers and conducted schools in ICTP, Japan, UAE, USA etc.
- About 125 applications/yr, ~35 participants selected.

Nuclear Knowledge Management (NKM) Schools
- 10th NKM School at ICTP in Trieste, Italy – Aug. 2014.
- Since 2004 trained over 300 young nuclear professionals.
- About 150 applications/yr, ~30 participants selected.
Inter-linking Networks

- “Networking education should be further made more efficient by interlinking networks and sharing best practices on a global scale”
  ~SAGNE
- “We give high priority to assisting developing countries…”
  ~DG Statement, GC57
- “Access to modern science and technology is essential for achieving all of the Millennium Development Goals.”
  ~ President of the Conference GC57

Asia -- ANENT
Latin America – LANENT
Africa – AFRA-NEST
Inter-regional cooperation

INTERLINKING NETWORKS
Asian Network for Education in Nuclear Technology

Established in 2004 as a regional partnership to cooperate in capacity building and HRD
The ANENT has 19 participating countries, and 6 collaborating organizations.

Latin American Network for Education in Nuclear Technology

Established in 2011 as a regional partnership to cooperate in capacity building and HRD
The LANENT has 12 participating countries
AFRA-NEST (AFRA-Network for Education for Science and Technology) is established and empowered by AFRA Member States to implement AFRA strategy on Human Resource Development (HRD) and Nuclear Management (NKM).

Twenty-four African Member States were represented at the 1st AFRA-NEST GA with delegates from Universities, Research Institutes and Laboratories and National Atomic Energy Commissions. Five collaborating organizations were also represented.

Cooperation Agreement among Regional Nuclear Education Networks

- During the 57th General Conference 2013, a Cooperative Agreement between Africa, Asia, Europe and Latin America was signed.

- Recently launched e-learning modules for new nuclear power programmes were introduced (supported by Korea EBC).

- Internet Reactor Laboratory was demonstrated.

The CA was signed by:

- Mr. S. Mallam (in picture) on behalf of Mr. E. Akaho, Chairperson of AFRA-NEST
- Mr. H. Haditjahyono, Chairperson of ANENT
- Mr. W. Ambrosini, President of ENEN
- Mr. R. Barrachina, Chairperson of LANENT

5/16/2014
Common Topics and Priorities for Networking Nuclear Education

1. Human Resource Development
   Workforce planning, Systematic approach to training, other National HRD activities

2. Cooperation between Education and Training institutions with industry
   Importance of industry involvement in the education process

3. Use of technology
   New media and electronic methods (Learning Objects)

4. Outreach
   Outreach activity toward secondary school and/or secondary school teachers

5. Quality of Education and Training
   National & international accreditation

6. The role of governments in educational networks
   National & international collaboration

7. Sustainability of educational networks
   National & international sponsors, legal status, communication strategy etc.

Background
Knowledge marketplace
Thematic areas
National Networks
Background on AFRA-NEST

- Conceived at the AFRA Ministerial Conference held in Aswan in 2007.
- The main objectives of AFRA-NEST are
  - to facilitate the operation and networking of higher education, training and related research in Nuclear Science and Technology (NS&T) in the African Region, and
  - to foster sustainable human resource development and nuclear knowledge management,
  - to satisfy the needs of African countries with/without higher education and training, in the priority areas of non-power and power applications of nuclear energy.
- administered by a High Level Steering Committee,
- The 1st General Assembly of AFRA-NEST was held in 26-30 August 2013, Arusha, Tanzania
Needs Offers

Prioritizing
Formed Working Groups

AFRA-NEST Thematic Areas
Recommendation of AFRA-NEST GA

Formation of National Networks to:
• Widening academic and industrial collaboration, knowledge transfer and outreach;
• Facilitating access to nuclear research facilities;
• Developing harmonized approaches for education in NS&T in Africa by establishing reference curricula and facilitating recognition of degrees.
• Implementation of National NESTs complement the work of the HLSC and AFRA-NEST at the regional level.

Proposed AFRA-NEST Network Structure

AFRA-NEST

Tanzania (TAN-NEST)  South Africa (e.g. SA-NEST)  Ghana (e.g. GHA-NEST)  Ghana (e.g. GHA-NEST)  etc

AFRA-NEST National Coordination
AFRA-NEST—One to many

AFRA-NEST, a learning network
Knowledge is developed and shared regionally

AFRA-NEST, A Network of Networks

Global Context
National NEST
International collaborators

National Initiatives
Inter-regional Initiatives
Regional Initiatives

IAEA
Tanzania Network for Nuclear Education, Science and Technology (TAN-NEST)
Conclusions of the URT Consultative meeting on National Networks 2-6 December 2013, Arusha Tanzania

TAN-NEST CONCEPT

Milestones for development of the TAN-NEST Concept

Planning 2011-2013
Request IAEA support For National NEST
Capacity Assessment /GAP
NEST Stakeholder Meeting/ support
TAN-NEST concept developed
Outline Master Plan with Actions & Implementation Guidelines for TAN-NEST
URT Consultative Meeting on National Networks
2-6 December 2013, Arusha Tanzania
Strategic Objectives for establishing TAN-NEST

- Widen academic and industrial collaboration and enhance knowledge transfer
- Facilitate access to unique nuclear research facilities in the countries and overseas
- Support government regulator, industry and academia in nuclear programme development
- Promote national capability and knowledge internationally (e.g. AFRA-NEST)
- Strategic advice
- International engagement
- Access to facilities
- Collaboration/coordination

[Proposed] Structure of a National NEST
Based on the Tanzanian Nuclear Educational Network Concept (TAN-NEST)

National General Assembly
All national stakeholders are invited to participate. External collaborators can also be invited to participate.

Steering Committee
Formulating basic policy and outline

Secretariat
Managing the day to day operations of the NEST. Under the auspices of the Secretary general (cf. AFRA-NEST Nat. Coordinator)

Thematic Areas
- Submitting and discussing individual inter-organ projects and activities

Thematic Area 1
Quality Education & Training

Thematic Area 2
Capacity Building

Thematic Area 3
Outreach

Thematic Area 4
Use of ICT

Thematic Area 5
Sustainability / Fundraising

General Assembly
Steering Committee
Secretary General
Secretariat
Tanzanian Nuclear Educational Network (TAN-NEST) Concept

Conclusions of the Consultancy Meeting on National Level Nuclear Education Capability Assessment and Planning (E-CAP)
20-24 January 2014

E-CAP FRAMEWORK
Elements of the E-CAP Framework

E-CAP are the processes through which nuclear knowledge resources (human, structural and social capital) are combined and co-ordinated to form strategic assets with potential to contribute towards sustainable development and industrial innovation within a particular macro context.
Analytical Constructs of the E-CAP Framework Process

National Priorities
Country Programme Framework
National Nuclear Policy,
National Development Strategy, etc.

External factors:
Social, political, technological, legal, Environmental etc.

Assessing Stakeholder Expectations
Capacity Building
N. Education

Analysis
Choosing
Implementing

Selecting a strategy
Identifying value chain options
Based on national priorities
Industrial competitiveness etc.

Evaluating value chain options
Feasibility, desirability, affordability etc.

Safety culture & organizations change Req.
Organizational structures
National NEST structure
N. Edu. Consortiums/Cooperative Agreements etc.

Management Processes
Resource mobilization plan
Website / ICT / eLearning workflow etc.
E-CAP approach to strategy analysis

1. Assess the nuclear educational resources

2. Explore the linkages between nuclear education, research and industry

3. Appraise the nuclear education resources and capabilities in terms of
   (a) National priorities
   (b) Supply and demand to the labour market
   (c) Industrial innovation

4. Develop strategy implications:
   (a) In relation to strengths
       - How can NS&T education be exploited more effectively and fully?
   (b) In relation to weaknesses
       - How can weaknesses be corrected through acquiring and developing human resources and capabilities?
       - Identify opportunities to collaborate on activities that can be better performed in other countries/institutions (e.g. Research Reactor Coalitions)

Capability Assessment and Planning Framework Milestones

- Request IAEA support for National NEST
- Capacity Assessment /GAP
- NEST Stakeholder Meeting / support
- National Nuclear NEST Concept
- Outline Master Plan with Actions & Implementation guidelines
- Definition of Responsibilities for NEST
- Government support
- Recruitment & preparedness
- Collaboration National & International
- Governance / Statuses
- Cooperation/coordination with AFRA-NEST GA and other int. institutions
### Data Requirements

**Industry**
- Types / no. of staff
- Workforce demand

**Universities & Colleges**
- No of graduates / No of teachers
- Types of Facilities

**Regulators**
- Types / No of staff
- Workforce demand

**R&D Orgs**
- Types / No of staff
- Workforce demand

### Identifying key success factors

**Prerequisites for success**
- Government Priorities: How does the country intend to apply N. Science and technology?

**What do N. Orgs want**
- Education/ R&D/ Industry/ Regulators

**Analysis of socio-economic impact of N. Applications**
- What drives the economy?
- What are the main dimensions of industrial applications of NS&T?
- How can NS&T be applied to optimize development?
- How can the country obtain a superior competitive position from application of NS&T?

**Analysis of supply:**
- No of SQEP trained in NS&T

**Analysis of demand:**
- Who are the employers?
- What do they want?

**Resources**
- Resource Mobilization Drive

**Key success factors**
Conclusions & Recommendations on E-CAP

Analysis
- **Situation analysis**: matching supply and demand
- **Self assessment**: NKM self assessment tools

Choosing
- **Industrial Policy (UNIDO)**: Link NEST to industrial policy

Implementation
- **NEST Champion**: selecting the “right” people
- **Employers of Nuclear personnel**: beneficiaries & customers
- **Seed money and resource mobilization**: Steering Committee
- **International Cooperation**: UNIDO, IAEA, UNESCO, other regional and national networks/institutions (ENEN, NTEC, KAERI etc)
E-CAP is like appreciating the whole mountain from far...

### List of AFRA-NEST Meetings for 2014/2015

<table>
<thead>
<tr>
<th>Events</th>
<th>Venue</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>AFRA-NEST ICT Development and Administration</td>
<td>Vienna</td>
<td>7-11 April 2014</td>
</tr>
<tr>
<td>Consultancy Meeting on Virtual Nuclear Management University (VNMU)</td>
<td>Vienna</td>
<td>28-30 April 2014</td>
</tr>
<tr>
<td>AFRA-NEST National Coordinators Workshop*</td>
<td>Nigeria</td>
<td>7-11 Jul 2014</td>
</tr>
<tr>
<td>AFRA-NEST Working Group Planning Workshop (HRD, RR, HH)</td>
<td>Vienna</td>
<td>24-28 Nov 2014</td>
</tr>
<tr>
<td>International Peer Review of NWU-KAERI e-learning courses for VNMU*</td>
<td>South Africa</td>
<td>February 2015</td>
</tr>
<tr>
<td>2nd General Assembly</td>
<td>Zambia</td>
<td>May-June 2015</td>
</tr>
</tbody>
</table>
Thank You