Early Integration of Nuclear Safety and Security and Safeguards

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1. ACTIVITIES INVOLVING RADIATION SOURCES AND NUCLEAR ENERGY IN AFRICA

• **Medical Applications**: around 60 cobalt machines for the treatment of cancers;

• **Industrial Applications**: gamma scan, NDT, well gauging;

• **Increasing Uranium exploration**: perspective for Mining and Milling;

• **Research Reactors** in operation – 9;

• **Nuclear Power Generation** -1;

• **More than 15 new interests** for NPP;
• Coming into force of the **Africa Nuclear Weapon Free Zone Treaty** (Pelindaba Treaty), July 2009; Establishment of AFCONE, May 04, 2011, under AUC.

  **Four pillars of Pelindaba Treaty**

  1) Non Proliferation
  2) Promotion of peaceful use of nuclear science and technology
  3) **Nuclear Safety & Radiation Protection**
  4) Cooperation and partnership.

• **Additional Protocol to Safeguards Agreements.**
## 2. Scope of Regulatory Infrastructure in Africa

<table>
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<tr>
<th>Countries with limited applications of RTs</th>
<th>Radiation Safety and Security Infrastructure</th>
<th>Additional Protocol</th>
<th>Pelindaba Treaty</th>
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<tbody>
<tr>
<td>RI for radiation safety and security required</td>
<td>Safeguards agreements: SQP; National Report required since 2005</td>
<td>National Reports on Enforcement of the Treaty requested from SPs</td>
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</tbody>
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| Countries with applications of RTs and RR | RI for radiation and nuclear safety, security and Safeguards required | Safeguards agreements: Enforcement of Additional Protocol | National Reports on Enforcement of the Treaty requested from SPs |

| Countries with RTs, RR and/or NPP program | RI for radiation and safety, security and Safeguards required | Safeguards agreements: Enforcement of Additional Protocol | National Reports on Enforcement of the Treaty requested from SPs |

| Countries with RTs, RR and NPP | RI for radiation and nuclear safety, security and Safeguards | Safeguards agreements: Enforcement of Additional Protocol | National Reports on Enforcement of the Treaty requested from SPs |
3. ESTABLISHMENT OF REGULATORY INFRASTRUCTURE FOR SAFETY

- IAEA Model Project on Upgrading Radiation Protection Infrastructure proposed to Member States in 1996 to properly control the radiation sources, including systems of notification, authorization, inspection and enforcement.

- International Basic Safety Standards (BSS) for Protection against Ionizing Radiation sources, published in 1996 by IAEA, highlighted basic requirements to be fulfilled in all activities involving radiation exposure and five milestones towards their accomplishment:
  - Establishment of a Regulatory Infrastructure (TSA1)
  - Occupational Exposure Control
  - Medical Exposure Control
  - Public and Environmental Exposure Control
  - Emergency Preparedness and Response
4. Main achievements from the implementation of the Model project:

- Establishment in several countries of laws, regulations and regulatory authorities empowered to authorize and control practices involving radioactive sources;

- Promotion of common understanding with regard to the need for sound radiation safety frameworks and strong regulatory authorities.

Effectiveness of regulatory bodies not achieved.
IAEA Self assessment Tool (SAT)

• 2009, IAEA regional project (RAF9038) on self-assessment with the objective to promote continuous improvement of the national regulatory infrastructure for safety.

• Using IAEA Self assessment Tool (SAT), the implementation of this project in the Africa region lead to the following results for TSA1:
35% Low Progress
55% Medium Progress
10% High Progress
5. Specific Challenges to regulatory bodies in Africa:

- **Legislation:** Not consistent with international standards and guidance in several countries; no provision for safeguards; regulatory body not established by legislation; draft legislations awaiting promulgation.

- **No Regulatory program** in many countries to implement the provisions of the law.

- **Staffing and Training:** lack of qualified staff; lack of national strategy and program for training.

- **Funding of the regulatory body:** Few countries provide sufficient funding and resources to their regulatory bodies to fulfill all their regulatory activities.
6. Cooperation at regional and international level

- **Forum of Nuclear regulatory bodies in Africa (FNRBA)**

Voluntary forum of (now) 33 members Regulatory Bodies; Launched in March 2009 with the following objectives:
- Provide a platform for fostering regional cooperation;
- Provide for the exchange of expertise, information and experience;
- Provide opportunity for mutual support and coordination of regional initiatives;
- Leverage the development and optimisation of resource utilization.

IAEA International Conference on Effective Nuclear Regulatory Systems, Ottawa, Canada, 8-12 April 2013
• Heads of Regulatory Bodies meeting in plenary once a year in Africa.
• Steering Committee (9 members) meetings twice a year.
• 9 Thematic Working groups among which 2 specially mandated to work on the effectiveness of Regulatory Infrastructure:

➢ TWG1: Upgrading Legislative and Regulatory Infrastructure

➢ TWG3: Regulatory Framework for Licensing of NPP
Cooperation with IAEA

- Bilateral cooperation with IAEA to improve the regulatory infrastructures in Africa Member States, through national and regional TC projects;
- IAEA/GNSSN for FNRBA website.

Partnership

- Partnership between FNRBA and KINS to improve skills and knowledge;
- FNRBA –AFCONE partnership foreseen to implement the Pelindaba Treaty.
Summary

- Limited applications of radiation and nuclear technologies in African countries, except one;
- Africa, a nuclear weapon free zone, and several countries embarking into nuclear power program;
- Lack of financial and human resources;
  - Single national regulatory infrastructure, operational and well maintained, covering safety, security and safeguard requirements, for each country of the region;
  - Sustained capacity development program for continuous improvement of the regulatory system;
  - Regional and international cooperation.
THANK YOU