TSO Forum
The Technical and Scientific support Organization

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2007: 1st TSO Conf.: TSOs from different countries joint effort to develop a common understanding.

2010: 2nd TSO Conf.: Regulatory functions need to be science based. Creation of TSO Forum (TSOF) as a platform for networking between support organizations.

2011: Fukushima Daiichi accident: the “need for appropriate technical and scientific support” is one of the area of improvement for strengthening the effectiveness of national regulatory bodies.

2014: 3rd TSO Conference, about 250 participants from 42 Member States and 5 organizations: Lessons from Fukushima Daiichi accident, Acknowledge the role of TSO on research and development (R&D), TSOs to support building nuclear safety and security capacity in embarking countries.
TECDOC Technical and Scientific Support Organizations (TSOs) and Their Services Provided in Support of Regulatory Functions:
- Finalized in August 2016, currently under review by IAEA Publication Committee.

Support of the Technical and Scientific Capacity of TSOs of Regulatory Bodies in embarking countries:
- Based on the recommendations of the TSOF Conference 2014 in Beijing.
- Consultancy meeting July 4-6, 2016 with 9 experts from: embarking country (TSO VARANS – Vietnam), advanced nuclear countries (US NRC – USA, IRSN – France, CNSC – Canada, SEC NRS - Russian Federation, GRS - Germany, VTT – Finland), international organizations (ENSTTI, JRC - European Commission).
- Consultancy meeting Feb.2017: (1) completion of gap-analysis with additional requirements for IRRS and INIR missions, (2) build the Terms of Reference for an expert mission.
TSO Forum Activities:

- **Safety related R&D:**
  - Based on the recommendations of the TSOF Conference 2014.
  - Developed website page to promote relevant safety related R&D events and projects.
  - Consultancy meeting in March 2017: to promote TSO capacity and safety related projects and issues (contribution to the workshop embarking countries).
  - Cooperation with EC for a dedicated safety related R&D group: ToR under preparation (NS, NE, JRC, DG Research).

- **TSO Conference 2018 in Brussels**
  - Programme committee with TSOs + authorities (FANC, CSN, US-NRC) and international organizations (NEA, JRC).
  - 2 first days of each Steering Committee meeting (10-11 April and 17-18 April, 2017).

- **IAEA – ETSON Practical Arrangement:**
  - ToR under preparation for signature during General Conference GC61 in Vienna 2017.
Thank you for your attention....
FNRBA
The Forum of Nuclear Regulatory Bodies in Africa

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Main features of FNRBA

Since 2009, Forum of Nuclear Regulatory Bodies in Africa
• 33 IAEA Member States
  Angola, Botswana, Burkina Faso, Cameroon, Chad, Côte d’Ivoire, Democratic Republic of Congo, Egypt, Ethiopia, Gabon, Ghana, Kenya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Morocco, Namibia, Niger, Nigeria, Senegal, Seychelles, Sierra Leone, South Africa, Sudan, Tunisia; Uganda, United Republic of Tanzania, Zambia and Zimbabwe
• 9 countries considering Nuclear Power Programmes
• 10 Thematic Working Groups
• [http://gnssn.iaea.org/main/fnrba](http://gnssn.iaea.org/main/fnrba)

The priorities of FNRBA are (from Strategic Action Plan 2016-2021):

**Priority 1:** Create awareness of, and coordinate activities, amongst political and policy makers and other regional forums and organizations.

**Priority 2:** Establish an efficient and effective network of human resources supported by an IT platform to ensure sustainable regional strategies for capacity building with IAEA methodologies.

**Priority 3:** Ensure understanding, develop, promote and implement high standards of radiation protection, nuclear safety and security Member State.

**Priority 4:** Implement capacity building activities at the national and regional level in radiation protection, nuclear safety and security regulatory infrastructure and framework and promoting sustainable regional cooperation in developing needed human resources.

**Priority 5:** Harmonize of national plans for emergency preparedness and response, transport safety and security in line with international requirements to facilitate exchange of information and sharing of experiences.
FNRBA Activities: *Synergy, maturity and activity*

- **New FNRBA website**: News, FNRBA Scientific Publications, Upcoming events

- **Published 5 technical reports** on the FNRBA public website
  - Survey on status of legal framework, regulatory standards and safety goals (2011);
  - Survey on the Status of Regulatory Standards relating to Siting on NPP’s (2012);
  - Survey of status of International Conventions in TWG3 Participating Countries (2011);
  - Survey of the Status of National Nuclear Infrastructure Development (2014);
  - Survey on basic EPR infrastructures.
FNRBA Activities: *Synergy, maturity and activity*

**7 Workshops:**
- SMR workshop in June 7-10, 2016 in Vienna (NSNI);
- National Safety Knowledge Platform in June in Vienna (NSOC, jointly);
- Emergency Preparedness and Response in Oct. 31-November 4, 2016 organized by KINS in Daejeon;
- Control of Radioactive Sources Nov. 21-25, 2016 organized by KINS in Mombasa;
- Basic Professional Training Course in Nov. 21-25, 2016 organized by KINS in Mombasa;
- Emergency Preparedness and Response in Nov. 21-25, 2016 organized by ENSTTI-EC in Pretoria;

**Capacity building review mission:**
- Meeting on IAEA services (ETReS, SARCoN) in April 2016 in Nairobi, future mission in 2017 (official request from Kenya).
FNRBA Activities: *Synergy, maturity and activity*

- **Coordination meeting** of August 15-19, 2016 on *Needs and Services to be provided by FNRBA*
  - “*First meeting of that kind*” with 40 participants from 17 Member States: Steering Committee, TWG leaders, local experts, IAEA TO and donors US-NRC, KINS;
  - Governance level: review of the Charter, communication protocol, publication process and fostering sub-regional exchange, foster the cooperation with AU, WENRA, FORO, TSO Forum;
  - 50 Proposed activities: 50% development of skills and knowledge, 10% development of regulatory support documentation such as model regulations and guides, the rest related to experience sharing and development of a regional database and peer review services.
  - Next Coordination meeting in June 2017 in Vienna to review actions.
Assessing the needs

The objectives of the CS meeting:

• To propose ideas to **improve the governance** of FNRBA

• To propose **relevant products and services** that support the nuclear safety and security

• To propose **relevant activity plan with requirements for workshops** that fit to the needs in Africa (for each TWG)

• To ease the **consultation and the coordination with donors and internally at the Agency**

• To propose **tools to monitor the achievements** and the regular implementation of such assessment

The team:

- **Steering Committee** members,
- **Leaders of the 10 thematic working groups** (TWGs),
- **Local experts from 17** African Member States,
- **9 Technical Officers of the IAEA**, - **3 delegates of donors**: from the United States of America **US NRC** and the Republic of Korea **KINS**
- in total, about 40 experts from Botswana, Cameroon, the Democratic Republic of the Congo, Egypt, Ethiopia, Ghana, Kenya, Madagascar, Mali, Mauritius, Nigeria, Senegal, South Africa, the Sudan, Tunisia, Uganda and Zimbabwe

Main proposals and achievements:

- Assessment per TWG and key messages
- 50 Actions to support the FNRBA (policy makers, communication protocol, Charter, publication procedures)
- Activity plan per TWG and direct target impact
- Website requests for TWG EPR and Transport safety + 5 survey reports to be published on the website (EPR and Licensing)

Roadmap for each technical working group:

- Key messages
- Assessment of needs related to the TWG topic
- Assessment of needs related to the improvement of the impact of FNRBA on radiation and nuclear safety (including ideas for developing a generic survey to prepare yearly activity plan)
- Suggestions of services to be provided by FNRBA
- Proposal of activity plan 2017
- Activity report 2016 and publications for the website (before GC60)
Situation Analysis

- From RASIMS profiles, the IAEA carried out an analysis of the situation regarding the status of the regulatory infrastructure of the Member States (MS) in the region.

- Based on the results, MS were categorized in 3 groups based on their overall performance indicator for the 14 elements of TSA1.

- Nearly one third of the MS do not yet have an adequate regulatory infrastructure in place.
Needs Analysis

• The assessment has clearly revealed the weak areas within the TSA1 where MS further need assistance.

<table>
<thead>
<tr>
<th>TSA1 Element</th>
<th>Number of red countries</th>
<th>Number of yellow countries</th>
<th>Countries need improvement % (red)</th>
<th>Average PI (Out of 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management System</td>
<td>40</td>
<td>4</td>
<td>90.9 %</td>
<td>0.5</td>
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<tr>
<td>Enforcement</td>
<td>37</td>
<td>7</td>
<td>84.1 %</td>
<td>0.7</td>
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<tr>
<td>Inspection</td>
<td>24</td>
<td>18</td>
<td>54.5 %</td>
<td>1.2</td>
</tr>
<tr>
<td>Radioactive Sources Safety and Security</td>
<td>26</td>
<td>16</td>
<td>59.1 %</td>
<td>1.2</td>
</tr>
<tr>
<td>Authorization</td>
<td>19</td>
<td>22</td>
<td>43.2 %</td>
<td>1.4</td>
</tr>
<tr>
<td>National Register of Sources</td>
<td>19</td>
<td>21</td>
<td>43.2 %</td>
<td>1.4</td>
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<tr>
<td>RB Staffing and Training</td>
<td>17</td>
<td>23</td>
<td>38.6 %</td>
<td>1.4</td>
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<tr>
<td>Regulations</td>
<td>14</td>
<td>30</td>
<td>31.8 %</td>
<td>1.5</td>
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<tr>
<td>RB Establishment</td>
<td>18</td>
<td>24</td>
<td>40.9 %</td>
<td>1.4</td>
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<tr>
<td>RB Funding</td>
<td>22</td>
<td>19</td>
<td>50.0 %</td>
<td>1.3</td>
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<tr>
<td>International Cooperation</td>
<td>14</td>
<td>28</td>
<td>31.8 %</td>
<td>1.6</td>
</tr>
</tbody>
</table>
## Assessing the needs: Activities vs Challenges

<table>
<thead>
<tr>
<th>TWS5</th>
<th>Challenges / Activities</th>
<th>Proposed activities</th>
<th>Linked activities</th>
<th>Impact target</th>
<th>Type of deliverable</th>
<th>FNIMBA</th>
<th>US NRC</th>
<th>KINS</th>
<th>IEA</th>
<th>Priority as given in the Strategic Action Plan</th>
<th>Time proposed by CSIS 19/08</th>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>R, P</td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Possible support to be confirmed</td>
<td>3</td>
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<tr>
<td>TWS1</td>
<td>Legislative and Regulatory Infrastructure</td>
<td></td>
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<tr>
<td>TWS1</td>
<td>1.1) To raise awareness at regional and international level, on the importance and needs to strengthen the regulatory infrastructure in the region.</td>
<td>1.1.1) Regional Meeting for high level decision makers on the importance for their support to regulatory bodies.</td>
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<td></td>
<td>R</td>
<td>N</td>
<td>N</td>
<td>N</td>
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<tr>
<td>TWS1</td>
<td>1.2) To provide guidance to national regulatory bodies on its functions to regulate complex radiation practices.</td>
<td>1.2.1) Development of a Guide for Regulatory Bodies on licensing of Radiotherapy facilities (Activity to be implemented together with the experts in TWS2)</td>
<td></td>
<td></td>
<td></td>
<td>P</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>Possible support to be confirmed</td>
<td>1</td>
</tr>
<tr>
<td>TWS1</td>
<td>1.3) To have training courses, workshops and meetings to discuss issues and challenges related to strengthening of the regulatory infrastructure.</td>
<td>1.3.1) Regional Workshop for Heads of regulatory bodies in Africa to discuss the issues of sustainability of the regulatory infrastructure in the region.</td>
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<td>TWS1</td>
<td>1.4) Enhance the capacity of regulators in MS in the field of Regulatory Control of Radiation Sources</td>
<td>1.4.1) Advanced TC on Effective and Sustainable Regulatory Control of Radiation Sources</td>
<td>Activity proposed via TWS2</td>
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<td>TWS2</td>
<td>Radiotherapy</td>
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<td>TWS2</td>
<td>2.1) A training course be developed that will be used to train the members of the regulatory bodies that will be tasked with developing or drafting the model regulation. Those who have been trained in drafting regulations, will therefore be used to draft the model regulations that are needed to regulated radiotherapy activities in Africa.</td>
<td>2.1.1) Training program to increase technical capability and develop model regulation</td>
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<tr>
<td>TWS2</td>
<td>2.2) These experiences will range from conceptualising and developing radiotherapy facilities to inspection and enforcement activities that are carried out in radiotherapy.</td>
<td>2.2.1) Arrangement of two regional workshops to share experience among the member states</td>
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<tr>
<td>TWS2</td>
<td>2.3) Lack of regulatory competence in radiotherapy has resulted in poor inception and implementation of radiotherapy facilities. It is evident in many countries that new facilities are coming up but assessment of such facilities from design and shielding to quality control and assurance and finally to be inspection and enforcement remains a nightmare to both the regulator and the regulated. It is not easy to be regulated by people who are incompetent. It is with this that it is strongly proposed that the curriculum be enhanced to include opportunities for such training.</td>
<td>2.3.1) Explore the possibility to designate the Regional training center for Regulatory Body on RT</td>
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<tr>
<td>TWS2</td>
<td>2.4) Various member states have peculiar requirements when developing radiotherapy facilities. It is therefore advised that expert missions</td>
<td>Expert mission based on the specific need of member states</td>
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### Distribution of type of activities

- 1) Individual - Capacity Building
- 2) National - Development of Regulatory support documentation
- 3) National - Services (Review mission, Assistance)
- 4) Regional - Gap analysis, Survey
- 5) Regional - Database (list of experts, mapping of safety infrastructure)
- 6) Regional - Awareness of policy makers

To be defined: 11%
Suggestions of services to be developed by FNRBA

- To foster Harmonization of regulations and regulatory process: regulatory infrastructure, model regulations, guidance, inspection procedures, guidance to regulate complex radiation practices.
- To organise Peer reviews (emergency, transport…) with regional experts
- To develop Date Bases (safety infrastructures, Group of expert in the various specialized areas at regional levels and proposal for developing the Matrix based on SSG16 for embarking countries
- To develop a Request Assistance platform for Regulatory Bodies
- To promote exchange of information between the involved MS in the region as regard to the movement of radioactive sources across countries.
- To support capacity building in calibration of dosimeters and other inspection measuring instruments.
- To identify and strengthen regional training center(s) of excellence in different thematic working areas to be included in the Forum database
- To consider developing and implementing e-learning capability within the existing IT.
Suggestions of services to be developed by FNRBA

- To initiate practical arrangement among MS within the continent and sub region.
- To improve awareness of FNRBA activities and of the resources needed for regulatory bodies to implement a robust legal and regulatory framework.
- To facilitate cooperation within FNRBA and international partners to assist Member States in developing legal and regulatory framework.
Thank you for your attention....