

GNSSN – TSO Forum Side Event (65th IAEA General Conference)

Challenges for the TSOF: Ten Years Contributing to Strengthening Scientific Capacities for Nuclear Safety and Security for Regulatory Frameworks and Infrastructures

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TSO Forum



Established in 2010 by IAEA

Platform to encourage open dialogue among TSOs worldwide

Works to

- Strengthen the role of technical and scientific capabilities in MS
- Support technical and scientific capabilities in countries expanding or embarking on nuclear programme
- Promote coordination and collaboration among the TSOF members to foster scientific and technical capacity building
- Share safety and security research, development and experiences including lessons learned
- Share feedback on the use of the IAEA safety standards and other publications

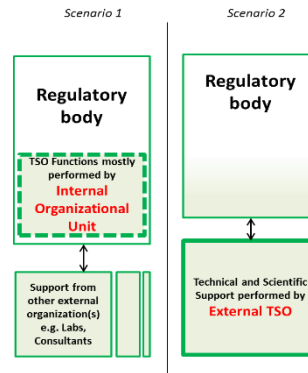
Context

What is a TSO?

*“A Technical and Scientific Support Organization (TSO) is an **organization or organizational unit** designated, or otherwise **recognized by a regulatory body and/or a government**, to **provide expertise and services to support nuclear and radiation safety and all related scientific and technical issues**, to the regulatory body.”*

IAEA GSR Part 1 requirement 11:

*“The government shall make provision for **building and maintaining the competence** of all parties having responsibilities in relation to the safety of facilities and activities.”*



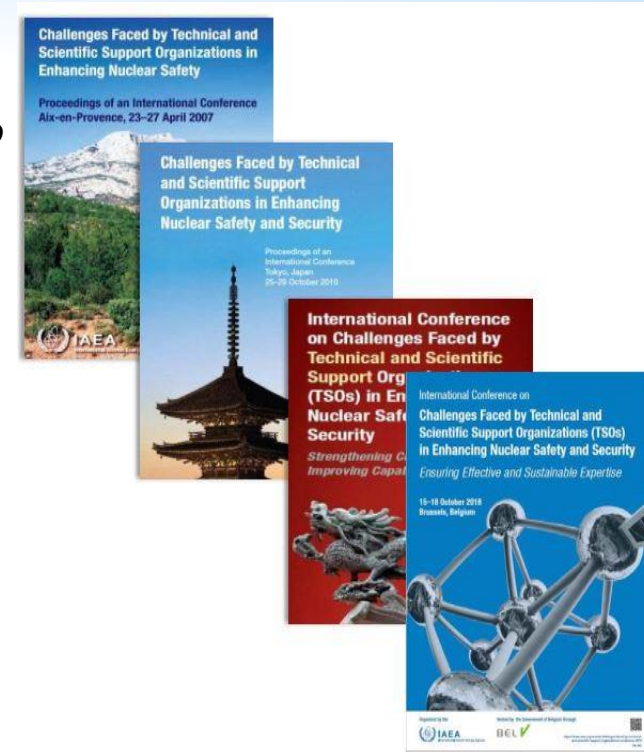
Context

General conclusions of past TSO conferences:

- *Need to share experiences and practices in nuclear safety assessment*
- *Expertise is science-based*
- *Need to define roles and characteristics of TSOs supporting regulatory functions*
- *Need to support Member States in their strategies to develop their TSO capacities*

Specific conclusions of IAEA TSO Conferences:

- 2007: 1st TSO Conference:
 - *develop a common understanding of the TSOs challenges*
- 2010: 2nd TSO Conference:
 - Regulatory functions need to be science based.
 - **Need of a platform for networking => Creation of TSO Forum**
- 2014: 3rd TSO Conference:
 - **Technical and Scientific function is a critical component of the regulatory system**
=> **Development of a TECDOC**
 - Member States should have the possibility to evaluate the capabilities of their national technical scientific support function. The TSO Forum (TSOF) could **contribute to the building of TSO capabilities of newcomer countries.** => **TSO initiative**
- 2018 : 4th TSO Conference in Brussels, Belgium:
 - **Encourage further progress of TSO initiative** => **TSO Self Assessment Tool + National Workshop**
 - **Promote TSO potential contribution to the independence and sustainable effectiveness of the national regulatory system.**



TSO Initiatives

**TECDOC-
1835**

**Experience
feedback**

**Cases
studies
library**

**TSO Self-
assessment
(TOSCA)**

**National
workshop**

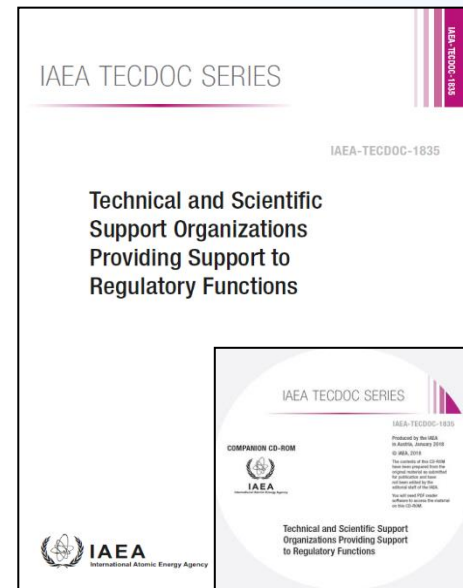


IAEA-TecDoc-1835



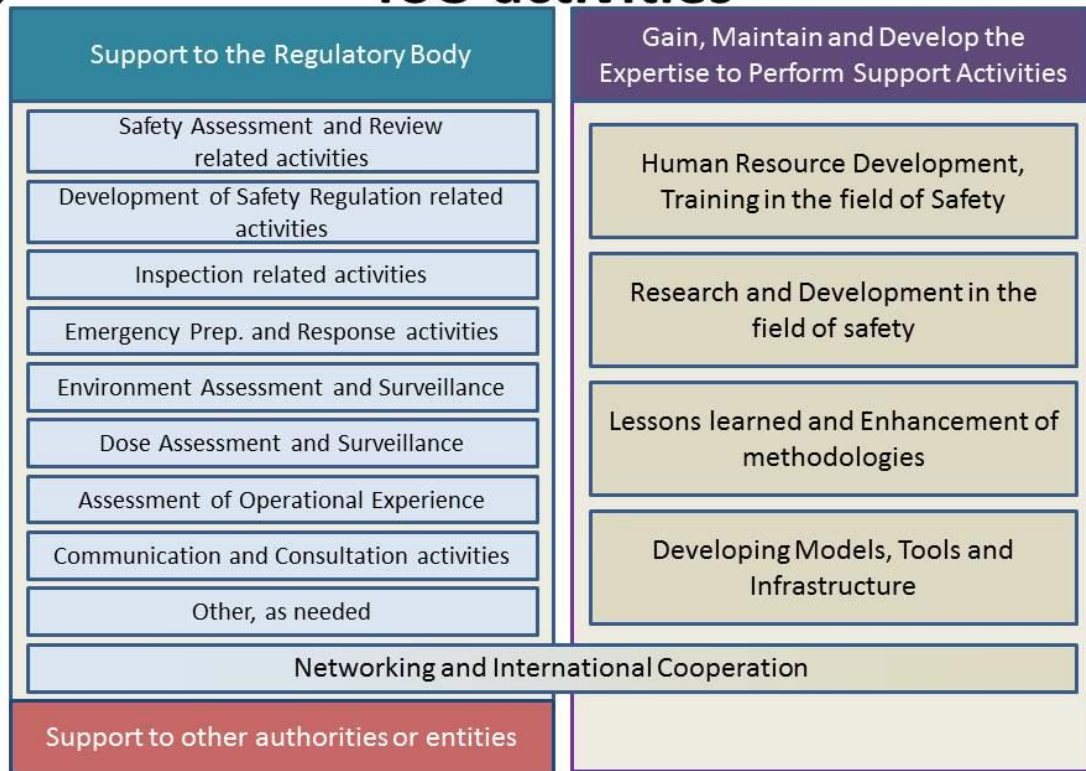
Technical and Scientific Support Organizations Providing Support to Regulatory Functions

- describes the general characteristics, organizational aspects and types of services provided by TSOs to support regulatory functions,
- provides description, common core values and characteristics, of TSOs in countries where the regulatory infrastructure is well established, and it focuses largely on nuclear safety issues
- Provides examples (CD-Rom)



IAEA-TecDoc-1835

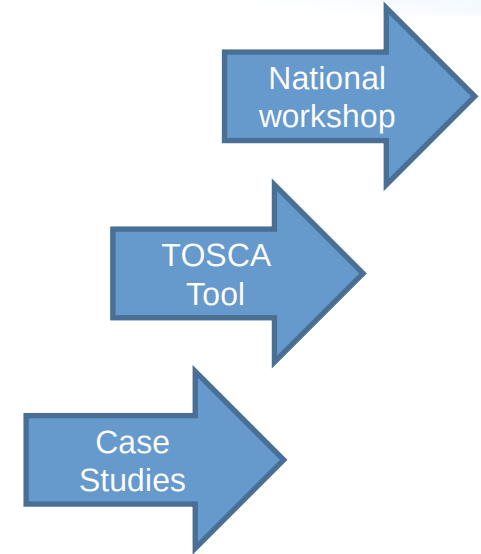
TSO activities



TOSCA
8 Pillars

Development of TSO capacity

- ✓ What are the Scientific & Technical capabilities of the TSO?
- ✓ How are they developed, managed and sustained?
- ✓ How are they applied in regulatory functions?



Case studies approach methodology



WHAT

- ✓ As TSO operations differ from country to country, no model to apply but lessons learnt can be shared
- ✓ « **tells a story** » of **what happened in a real situation**:
 - **processes** that occurred in given countries,
 - **national circumstances and constraints** that prompted TSO development.

Case studies available:

- ✓ Reasons that led to the development of a TSO: Pakistan (PNRA) and South Africa (NNR/CNSS)

Case studies under development:

- ✓ Development of research programme

TSO initiative – TSO self-assessment

1. Scope Setting

- Selection of relevant topics within the **8 pillar menu**
- Setting of expectations levels in regard to the **Timeline Strategy Steps**
- Setting **National Priority** Co-efficients for the chosen topics

2. Self-evaluation

- Assessing topics within relevant pillar with the help of the **TOSCA questionnaire and relevant IAEA documents** (TECDOC 1835, CASE STUDIES, SSG-16, ...)
- Automatic generation of results via analysis tool (**spider web-chart**)
- Results are displayed in different ways and also compared via **benchmarking**.

3. Self-assessment report and National Action Plan:

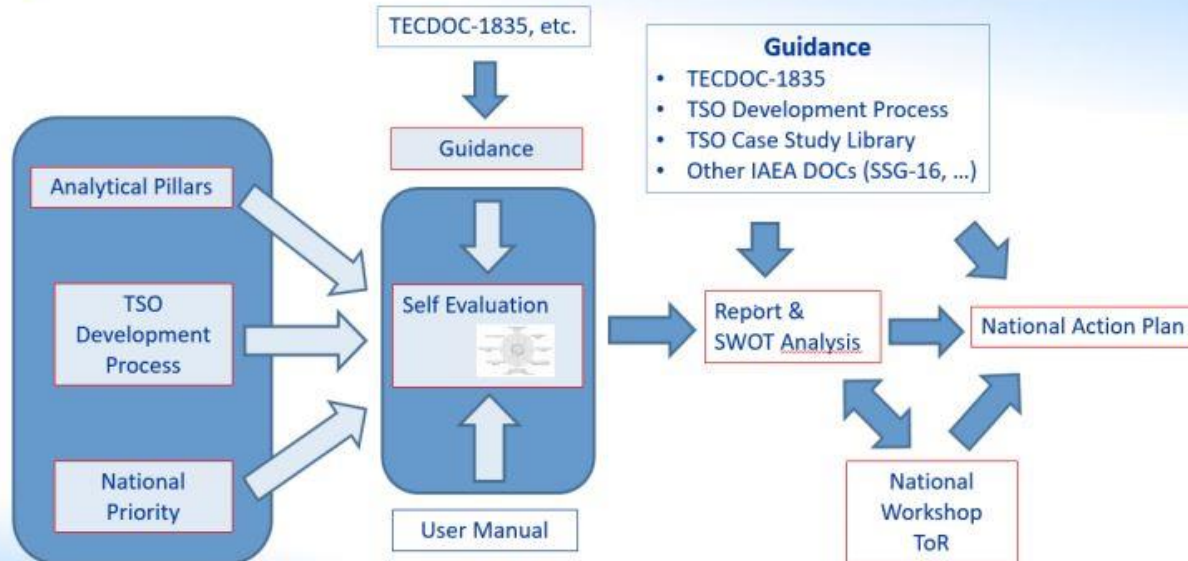
- Preparing the self-assessment report, identifying key **s**trengths and areas for improvement (**w**eaknesses), **o**pportunities and **t**hreats (**SWOT** analysis)
- Providing support, as needed, through **National Workshops** with IAEA experts.
- Preparing a National Action Plan to further implement the National TSO development strategy.

TSOF Initiatives

Self-Assessment Tool TOSCA with the Goal:

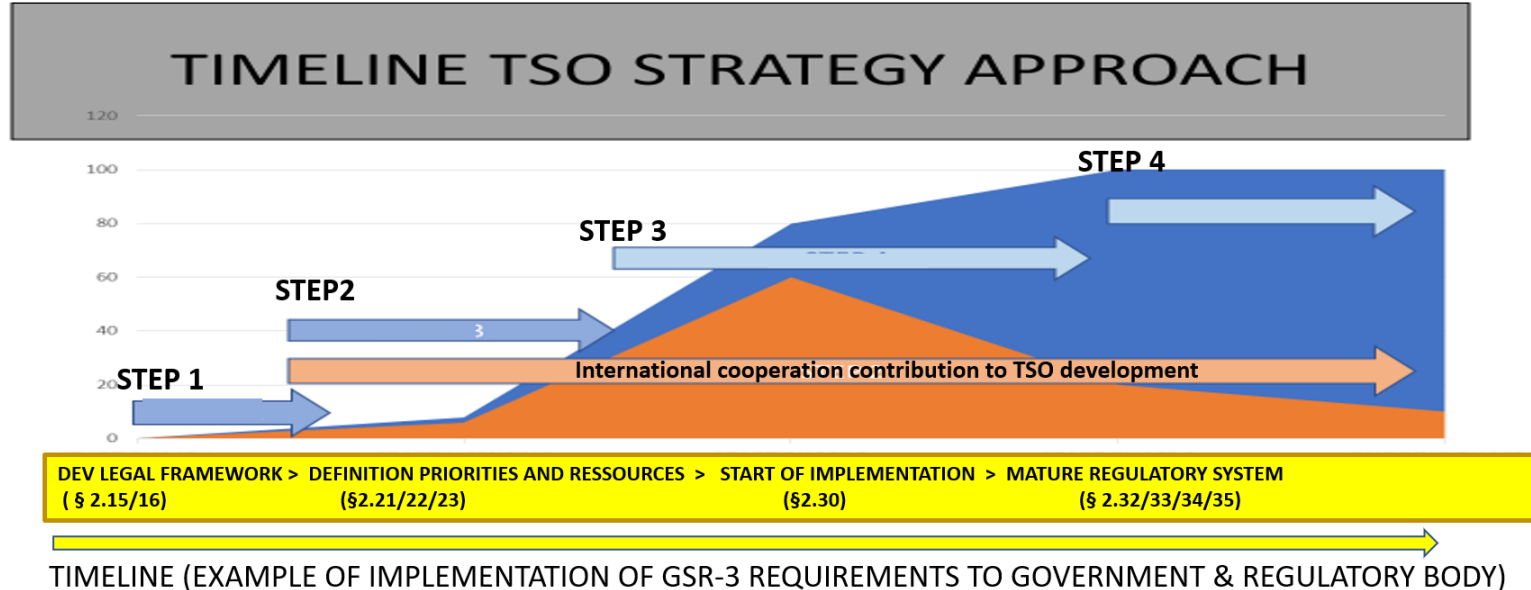
- Support in development of TSO capabilities

SAQ Tool : Structure



NATIONAL TSO DEVELOPMENT: country with no NPP program **RADIATION PROTECTION & SAFETY**

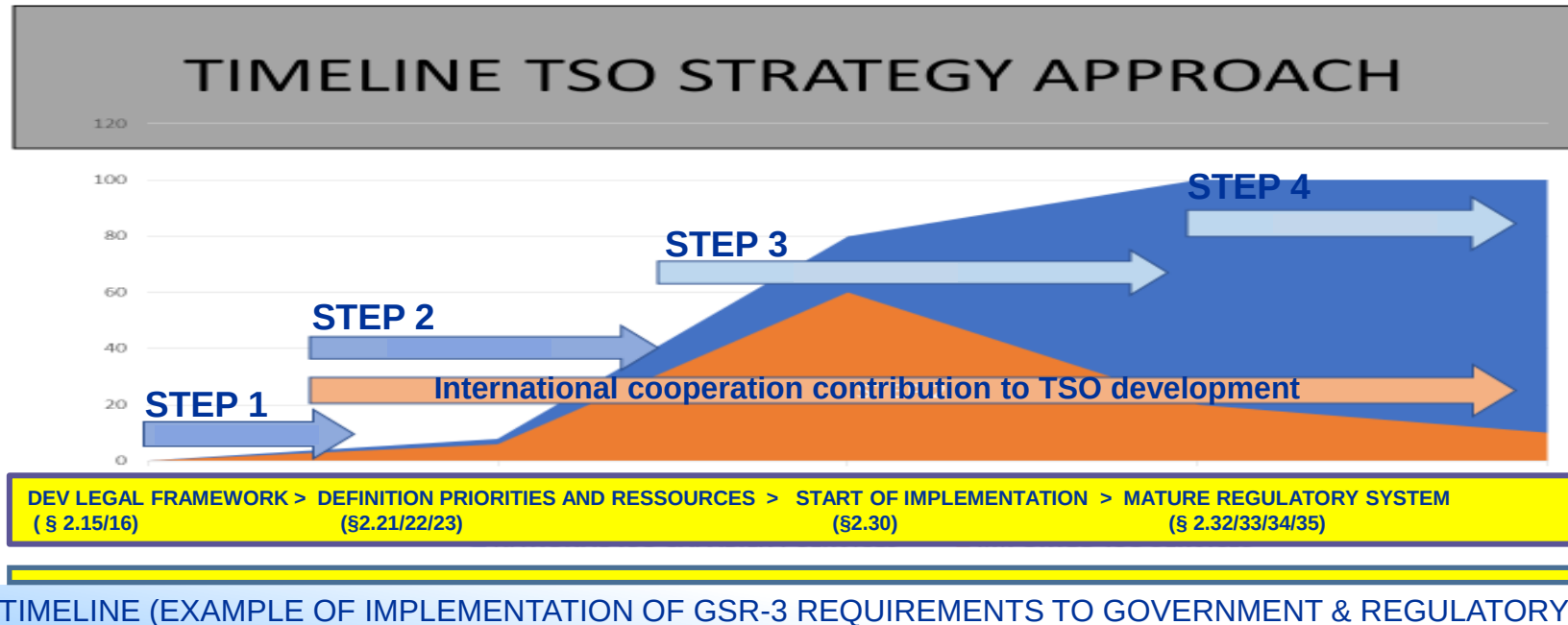
- 4 STEPS FOR TSO DEVELOPMENT (same concept for all countries)
- CASE OF A TIMELINE BASED ON NATIONAL EFFORT TOWARDS FULL IMPLEMENTATION OF GSR-3 REQUIREMENTS ()



NATIONAL TSO DEVELOPMENT

country with no NPP program: **RADIATION PROTECTION & SAFETY**

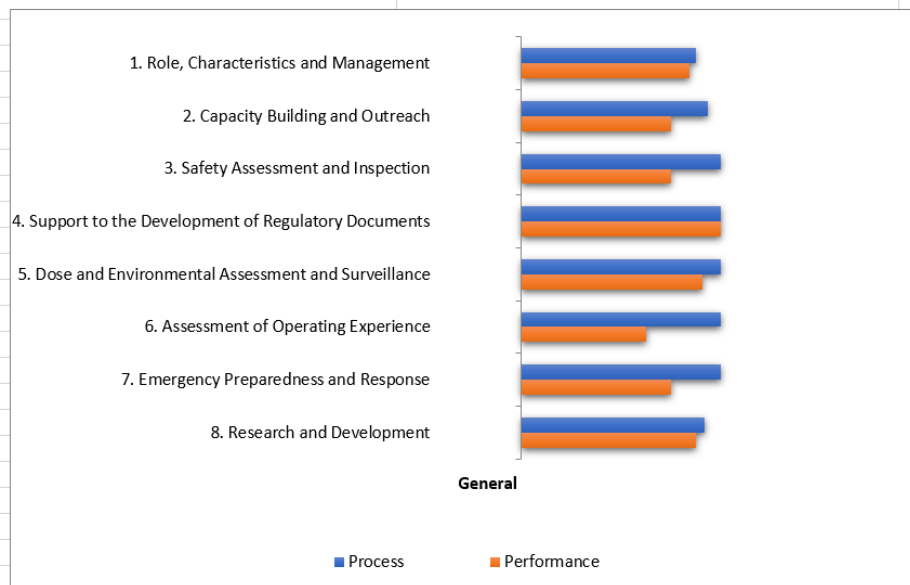
- 4 steps for TSO development (same concept for all countries)
- Case of a timeline based on national effort towards full implementation of GSR-3 requirements



TSO Initiatives - Self-Assessment Tool TOSCA

SWOT Analysis – Results (example)

General (Broad Analysis) - Process and Performance



TSO Initiatives - Self-Assessment Tool TOSCA



TOSCA Structure of the Questionnaire

Timeline	Priority	Questions	TECDO-1835	IAEA-Ref.	Rating
Strength and Weaknesses					
Key Questions Pillar 3 -Safety Assessment and Inspection					
A. Pillar 3 Safety Assessment and Inspection - General ☒ Existing					
1	0,5	Process oriented question: rating scale see Annex 1			
4	1	Please evaluate your existing/under development process for safety assessment in this area	4.1.2	SSG-16	0 2 4 6 8 10 ○ ● ○ ○ ○ ○
3	2	Performance oriented questions: rating scale see Annex 2			
3	2	2 Please rate resource availability with respect to the needs resulting from the TSO mission? (funds, experts, training opportunities, equipment – pls consider all issues together and document as necessary)			0 2 4 6 8 10 ○ ● ○ ○ ○ ○
		Please rate how experts involved in the operations are correctly aware of their missions in the TSO context, maintain state of the art knowledge and are cognizant of the nature of the job to be done (eg safety file critical analysis), and whether they can be considered fully accountable for the quality of their performance	3.1, 3.2, 3.4		● ○ ○ ○ ○ ○
		Please indicate whether you have a system to evaluate the satisfaction of customers/clients, and if yes pls rate the perception of the TSO's customers/clients (trust, cost/satisfaction ratio, delays, quality assurance,...)	3.3		○ ○ ○ ○ ● ○
		Please rate the involvement of your organization and of your experts in outreach and cooperation at national, regional and international levels	3.2.2, 4.9, 4.10		● ○ ○ ○ ○ ○
B. Pillar 3 Safety Assessment and Inspection - Topics					
3	0,5	I. Pillar 3 Safety Assessment and Inspection - Reactor physics ☒ Existing			

TSO Initiatives - Self-Assessment Tool TOSCA



TOSCA Assessment criteria

Timeline strategy		National priority					
1	National Agenda and infrastructure development		0	N/A			
2	Development a blue print for national TSO structure		0,5	low			
3	IMPLEMENT the blueprint, initiate and develop OPERATIONAL TSO SERVICES		1	medium			
4	Ensuring the sustainability and development		2	high			
5							

Annex 1: Process development-rating scale

0	Issue not yet addressed / issue under consideration						
2	A draft policy/project has been prepared in line with international good practice and recommendations						
4	A policy/project has been reviewed, approved and a decision made						
6	The policy/project is being implemented						
8	The policy/project is operational, including ongoing staff training capability as applicable, and a review process as below						
10	Trustable accountability of the TSO to the Regulatory Body (and other stakeholders) in the area concerned is considered well established, and an ongoing performance review and improvement process is in						

Annex 2: Performance-rating scale

0	Not yet started						
2	Activities/operation are at an initial stage, no meaningful assessment is available						
4	Major discrepancies between expectations/requirements and reality						
6	Expectations/requirements generally fulfilled, although there are no mechanisms designed to adjust if discrepancies occur						
8	Expectations/requirements fulfilled, and evidence of adjustment mechanisms						
10	Expectations/requirements met or exceeded and adjustment mechanisms fully effective						

From TOSCA to the National Workshop



1. Member State **request to the IAEA** for a TOSCA self-assessment
2. Pre-assessment exploratory IAEA **mission and preparation** of self-assessment
3. **Self-assessment** phase, with the support of the **TOSCA Tool**
4. **National TSO Workshop**, organized jointly by the Member State and the IAEA, with contribution of IAEA TSOE Experts
5. Drafting of the National TSO **Workshop Report** and elaboration (or update) of a draft National Technical Support Development Action Plan
6. Validation of Workshop Report by competent national authorities and by IAEA
7. Finalisation, and validation of **National Action Plan** by competent national authorities after consultation of IAEA TSOE Experts
8. **Implementation** of the Action Plan, and information feed-back to IAEA TSOE on implementation results
9. **Periodical self-assessment** – even partly – when appropriate or necessary

TSO Forum – Way ahead



5th international TSO Conference in St-Petersburg, Russian Federation – 10th to 13th October 2022
under the auspices of the Rostechнадзор and SEC NRS

Title:

IAEA International Conference on Challenges Faced by Technical and Scientific Support Organizations (TSO) in Enhancing Nuclear Safety and Security: ***Strengthening scientific basis, ensuring flexibility and stability in a fast-changing world as well as providing opportunities for the young generation.***

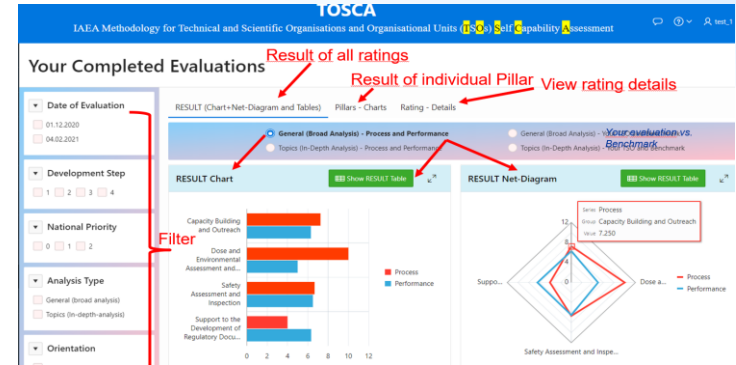
Objective:

The Conference is to consider how to develop and strengthen technical and scientific capabilities to achieve enhanced nuclear and radiation safety and security of facilities and activities, including legacy and emerging challenges as well as the exchange and transfer of best practices with embarking countries.

TSO Forum – Way ahead

- Further Development of the Self-Assessment-Tool for the technical and scientific capabilities supporting Regulatory Functions

- Further developed pillars
- TOSCA handbook
- Web-based tool



- Revision of the IAEA TECDOC-1835 with a specific focus on radiation protection and safety activities
- Application for National Workshops on developing and strengthening technical and scientific capacity, e.g. in Belarus, Bangladesh
- Development of R&D Topical Priorities for embarking countries

TSO Forum Current Members



Member States:

Belgium, Canada, China, Czech Republic, Finland, France, Germany, Italy, Japan, Lithuania, Pakistan, Republic of Korea, Russian Federation, Slovakia, Slovenia, South Africa, Turkey, Ukraine, United Kingdom.

Partner Organizations:

European Commission and its Joint Research Centre (JRC) and
European Technical Safety Organizations Network (ETSON).

Interest in joining the TSOF ?

Interest in the TOSCA-tool ?

Any questions or interest, please contact:

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Thank you!