

Workshop on the Development of TSO for Nuclear Power Programme/Project

3.4 Self-Assessment and Development - TOSCA Methodology

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IAEA TSO Forum to support mainly newly developing countries to build up a TSO (TOSCA)



Technical and Scientific Support Organizations Self Capability Assessment (TOSCA)

A new innovative web-based tool for the self-assessment of capabilities of Technical and Scientific Support Organizations (TSOs) supporting national regulatory bodies

What is the TSOF ?

The Technical Support Organizations Forum (TSOF), established in 2010 by the IAEA, promotes collaboration among TSOs and other organizations interested in technical and scientific issues related to nuclear safety and security.

TSOF is open to TSOs and expert groups nominated by IAEA Member States. Representatives of the European Commission, the Organization for Economic Co-operation and Development Nuclear Energy Agency (OECD NEA) and regional TSO networks participate as observers. A TSOF Steering Committee facilitates and oversees the implementation of the forum's programme.

What does TSOF Forum offer?

This forum offers a platform to develop common approaches to build and maintain a high level of safety in line with the IAEA Safety Standards (www.iaea.org/resources/safety-standards). It is an initiative to help Member States develop and strengthen their technical and scientific capabilities, based on an IAEA TECDOC 1835 developed with the support of the Forum.

Regulatory functions require support by scientific and technical expertise.

The support provided by the TSOs can facilitate development and/or provision of regulations and guides, notification and authorization, licensing procedures, regulatory review and assessment, regulatory inspection, enforcement, emergency preparedness and response and communication as well as opportunities to engage in consultation with interested parties.

There is no 'one size fits all' standard model for a technical and scientific support organization.

In this context, TECDOC-1835 defines core notions and values, to help countries to evaluate their current and future needs for technical and scientific support to cover the safety and security of the whole life cycle of their national nuclear facilities. This publication also provides some illustrative national examples on how to develop and enhance TSO capabilities. It also highlights that the organization and



resourcing of technical and scientific support is a responsibility of each country and should be in line with regulatory processes to achieve technical competence, sustainability as well as independence.

What is TOSCA?

The IAEA TSO Forum, based on recommendations of the International TSO Conferences, identified a need to further support countries in the self-assessment of their technical and scientific support capabilities. In response, a new self-assessment methodology and corresponding web-based IT tool was developed, called TOSCA.

The TOSCA tool is user-friendly and allows all stakeholders (government bodies, regulatory authorities, technical support providers including those embedded in regulatory bodies) to be included in the self-assessment process. TOSCA provides visual displays to synthesize the results of the self-assessment and support analysis (Fig. 1).

Implementation

The TOSCA implementation roadmap covers the following main steps (Fig. 2):

- Select from the broad list of topics covered in TECDOC 1835 and corresponding details of the relevant general safety requirements (GSR), the fields of technical support expertise which a country needs for assessment;
- Define the targets and expectations against which current technical support capabilities will be benchmarked;
- Assess these capabilities in terms of organization and processes, and in terms of performance of the support actually provided;
- Elaborate the main conclusions drawn from the self-assessment, and present them at a national TSO workshop;
- Develop an action plan to further enhance national technical and scientific support



Fig. 1: Display of results

capabilities and ensure their sustainability, in line with current and future national regulatory needs.

Upon request from Member States, the IAEA will provide relevant support to conduct the self-assessment exercise (Fig. 3). This includes a preliminary mission of IAEA experts to the country, followed by a national TSO workshop, which includes all key stakeholders to work and develop a national TSO action plan for developing, enhancing and sustaining technical and scientific capabilities supporting regulatory functions.



Fig. 3: Self Assessment Exercise

Interested in the TOSCA approach and self-assessment tool?

TSOF.Contact-Point@iaea.org
Visit: <https://gnssn.iaea.org/main/tsof>

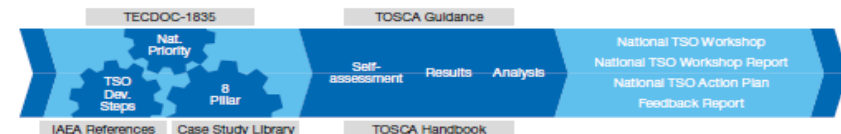


Fig. 2: Roadmap

2. TSO initiative – TSO self-assessment

- Objective to assess the Scientific & Technical capabilities of a TSO :
 - What are the Scientific & Technical capabilities of the TSO?
 - How are they developed, managed and sustained?
 - How are they applied in regulatory functions?
 - To be used as self-assessment tool, in workshops among MS, or in connection with peer reviews
 - For embarking countries or countries with already established capabilities
- Key considerations in the development of the questionnaire
 - Based on the IAEA-TECDOC-1835
 - Emphasis on evaluation of how the TSO is performing its duties

2. TSO initiative – TSO self-assessment

1. Scope Setting

- Selection of relevant topics within the **Technical & Managerial 8 pillar menu**
- Setting of expectations levels in regard to the **TSO Development 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 strengths and areas for improvement, opportunities and threats (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.

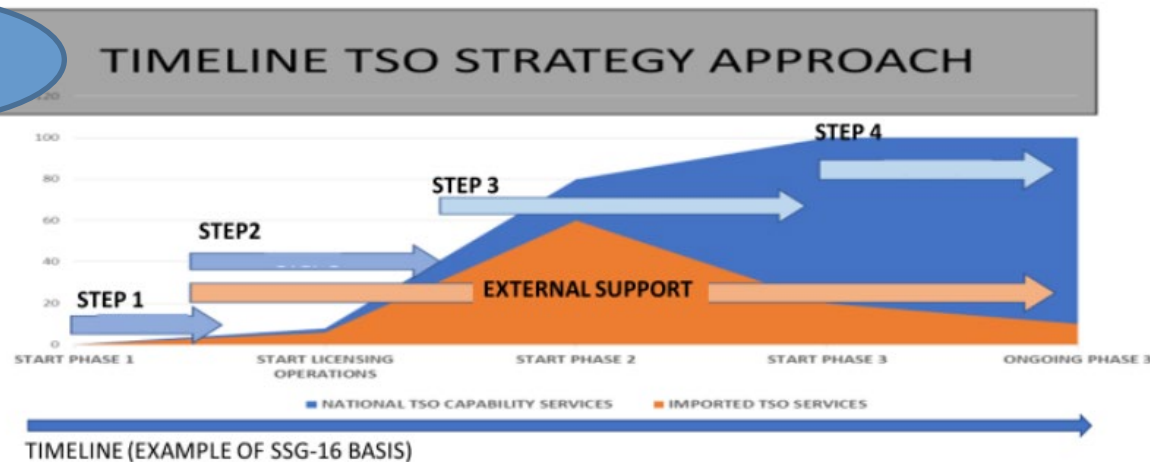
Why TOSCA Methodology ?

Definition of Methodology

1. a system of methods used in a particular area of study or activity.
 - ✓ all around nuclear + radiation safety + security
2. "a methodology for investigating the concept of focal points (FP)"
 - ✓ technical FP and interested parties

TOSCA Methodology

WHEN?



Case Study Library

You will find a list of TSO case studies of member states illustrating key TSO development and operational problematics.

WHY?

Establishment of
NNR TSO Case
Study_June 2020

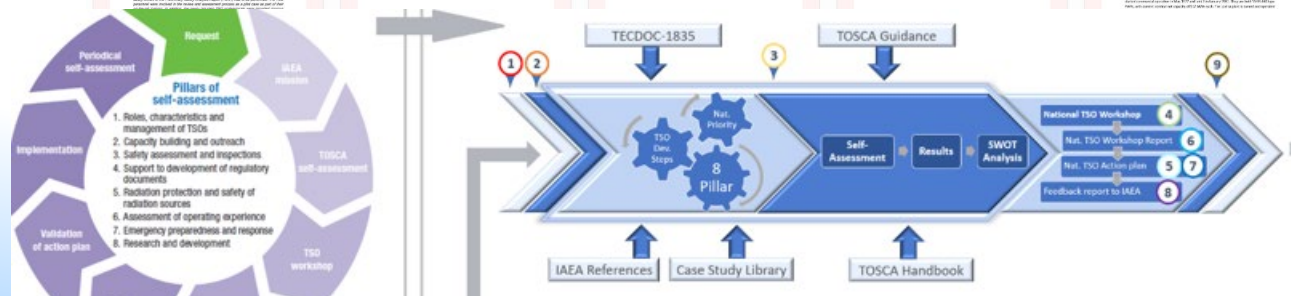
IRSN France TSO
Case study on
Research_Jan 2023

TSO Case Study
(final)_PNRA-
Pakistan

VTT Finland_TSO
Case
study_Research
Programmes

WHAT?

HOW?

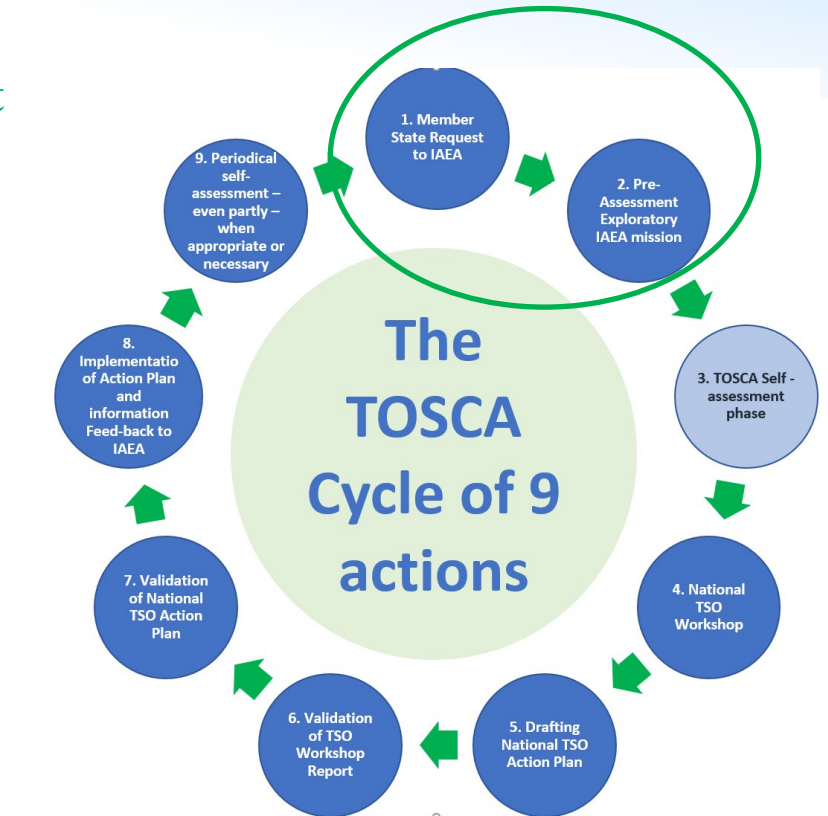


WHO?



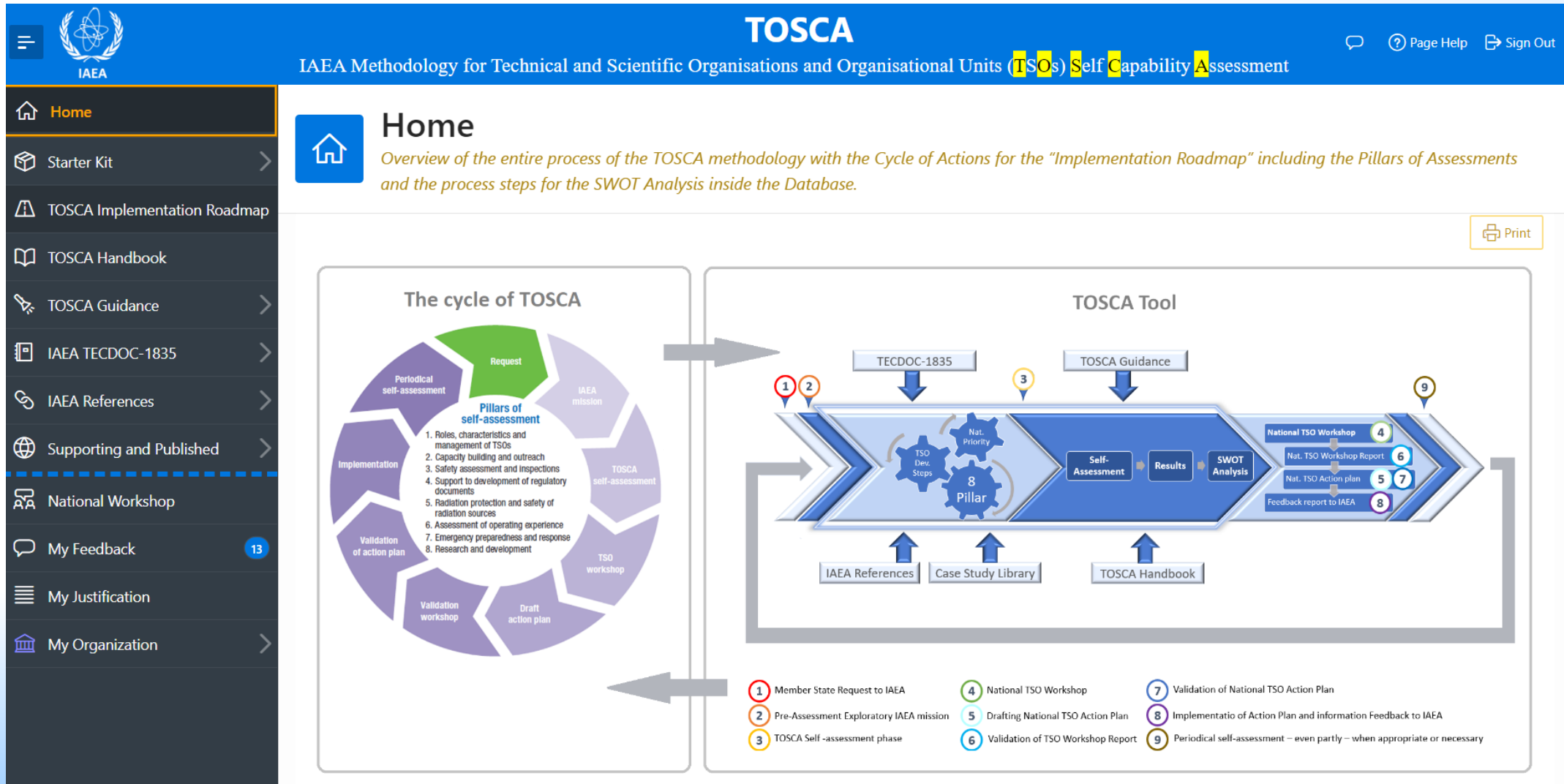
From TOSCA to the National Assessment Workshop and National Action Plan

- 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 Finalization, 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



TSOF Activities – TOSCA Methodology

3. Self-Assessment- Phase for the technical and scientific capabilities supporting Regulatory Functions (TOSCA)



TOSCA

IAEA Methodology for Technical and Scientific Organisations and Organisational Units (TSOs) Self Capability Assessment

[Page Help](#) carlaclaudia.es@gmail.com



8 PILLARS

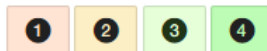
The questionnaire under the process and performance-oriented aspects are grouped into 8 chapters, represented as PILLAR.

Role, Characteristics and Management

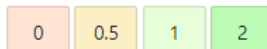
Pillar 1

The characteristics and management of technical and scientific support are the conditions for its effectiveness and efficiency for the regulatory functions.

Development Step:



National Priority:

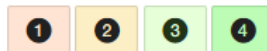


Capacity Building and Outreach

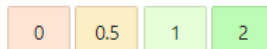
Pillar 2

The development and maintaining of technical knowledge, expertise and capability is a key supporting process for an effective TSO.

Development Step:



National Priority:

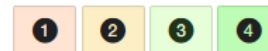


Support to Safety Assessment and Inspection

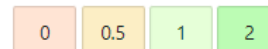
Pillar 3

Safety assessment review and inspection are performed to support the regulatory body in determining whether facilities and activities comply with regulatory obligations and conditions.

Development Step:



National Priority:

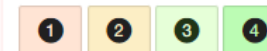


Support to the Development of Regulatory Documents

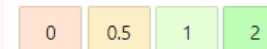
Pillar 4

The TSO supports the regulatory body by contributing to the process of updating and development of documents for guidance, rules, and regulations.

Development Step:



National Priority:



Radiation protection and Safety of Radioactive sources

Pillar 5

The TSO contribution to radiation protection and safety as well as to environmental monitoring, assessment and surveillance is key issue for protecting people and the environment.

Assessment of Operating Experience

Pillar 6

The TSO supports the regulatory body to investigate and disseminate information on operating experience to use this in their management, safety assessment and engineering practices.

Emergency Preparedness and Response

Pillar 7

The TSO supports the regulatory body together with the response organizations and the operating organisations in emergency preparedness and response.

Research and Development

Pillar 8

Research and development support of the TSO is to independently assess and review the adequacy of the technical basis for safety regulation.

TOSCA – Assessment Results



☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ 6

☐ 7

☐ 8

Analysis Type

☐ Broad analysis

☐ In-depth-analysis

Orientation

☐ Performance

☐ Process

Development Step

☐ 1

☐ 2

☐ 3

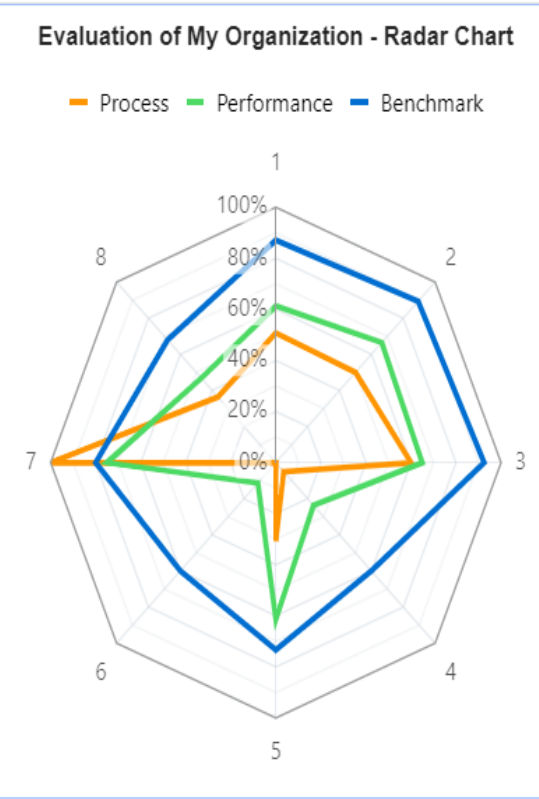
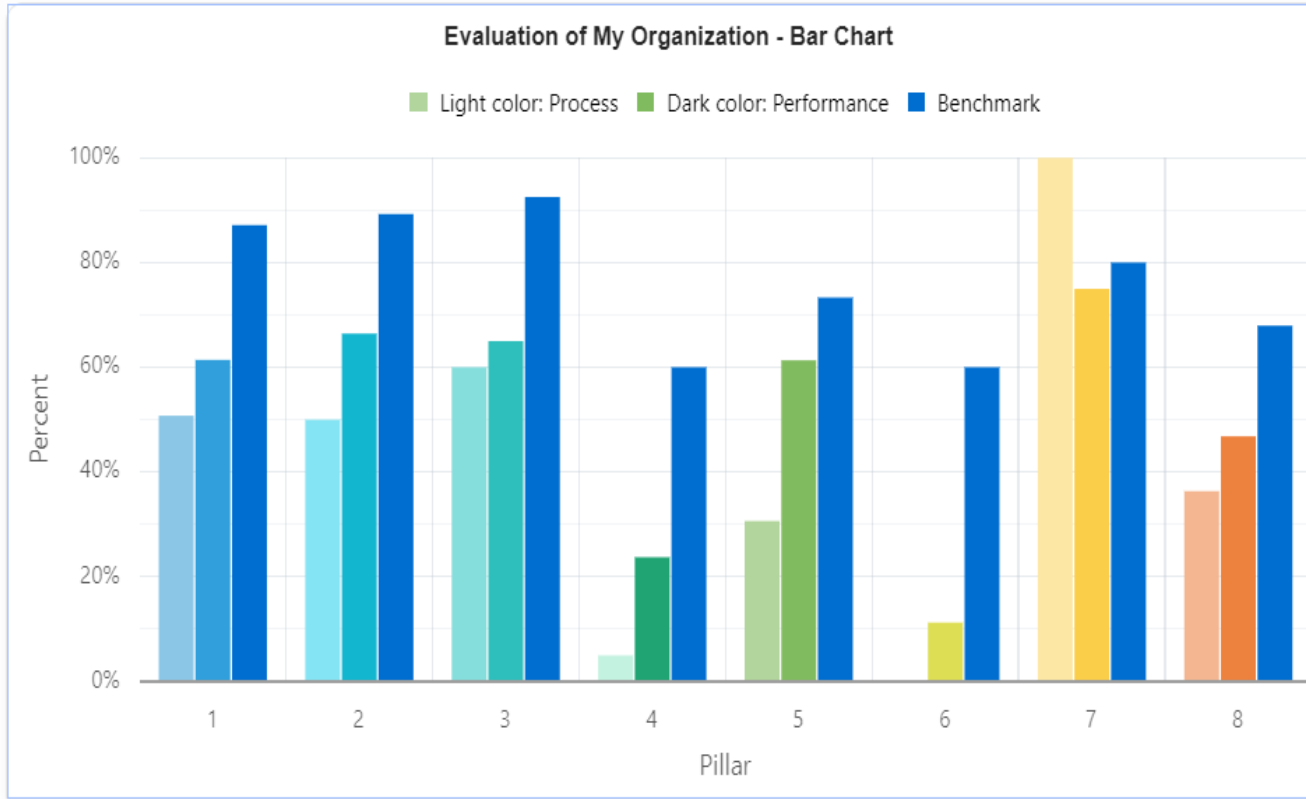
☐ 4

National Priority

☐ .5

☐ 1

☐ 2



Pillar	Name	Analysis Type	Orientation	Development Step	National Priority	Rating	Benchmark
1	Role, Characteristics and Management	Broad analysis	Process	① ② ③ ④	L M H	★★★★☆	★★★★☆
1	Role, Characteristics and Management	Broad analysis	Performance	① ② ③ ④	L M H	★★★★☆	★★★★☆

SWOT Analysis with TOSCA



IAEA

TOSCA

IAEA Methodology for Technical and Scientific Organisations and Organisations

Home

Starter Kit

Self Assessment

My Organization

Participants and Roles

Result of Evaluation

SWOT Analysis

Feedback

Justification

My Organization \ SWOT Analysis

All documentation related to the work for your National Workshop is collected here

Edit	Chapter
	SWOT ANALYSIS TEMPLATE
	I. INTRODUCTION
	II. OBJECTIVES AND SCOPE
	II.1. COMPANY OVERVIEW
	II.2. MISSION STATEMENT
	II.3. VISION
	III. SWOT-ANALYSIS – SUMMARY AND INTERPRETATION OF THE PILAR RESULTS
	III.1. PILLAR 1: ROLES, CHARACTERISTICS AND MANAGEMENT OF TSOs
	III.2. PILLAR 2: CAPACITY BUILDING AND OUTREACH
	III.3. PILLAR 3: SAFETY ASSESSMENT AND INSPECTIONS
	III.4. PILLAR 4: SUPPORT TO DEVELOPMENT OF REGULATORY DOCUMENTS
	III.5. PILLAR 5: RADIATION PROTECTION AND SAFETY OF RADIATION SOURCES
	III.6. PILLAR 6: ASSESSMENT OF OPERATING EXPERIENCE
	III.7. PILLAR 7: EMERGENCY PREPAREDNESS AND RESPONSE
	III.8. PILLAR 8 : RESEARCH AND DEVELOPMENT
	IV. CROSS CUTTING ISSUES AND FINDINGS

SWOT Analysis Report



TABLE OF CONTENTS

I. [INTRODUCTION](#)

II. [OBJECTIVES AND SCOPE](#)

II.2. [COMPANY OVERVIEW](#)

II.2. [MISSION STATEMENT](#)

II.3. [VISION](#)

III. [SWOT ANALYSIS](#)

III.1. [PILLAR 1: ROLES, CHARACTERISTICS AND MANAGEMENT OF TSOs](#)

III.2. [PILLAR 2: CAPACITY BUILDING AND OUTREACH](#)

III.3. [PILLAR 3: SAFETY ASSESSMENT AND INSPECTIONS](#)

III.4. [PILLAR 4: SUPPORT TO DEVELOPMENT OF REGULATORY DC](#)

III.5. [PILLAR 5: RADIATION PROTECTION AND SAFETY OF RADIAT](#)

III.6. [PILLAR 6: ASSESSMENT OF OPERATING EXPERIENCEN](#)

III.7. [PILLAR 7: EMERGENCY PREPAREDNESS AND RESPONSE](#)

III.8. [PILLAR 8 : RESEARCH AND DEVELOPMENT](#)

IV. [CROSS CUTTING ISSUES AND FINDINGS](#)

V. [FEEDBACK](#)

V.1. [ON THE SELF-ASSESSMENT QUESTIONNAIRE](#)

V.2. [ON THE SELF-ASSESSMENT TOOL](#)

VI. [SWOT CONCLUSIONS](#)

VI.1. [ORGANISATION CONCLUSION SUMMARY](#)

VI.2. [TOWARDS AN ACTION PLAN](#)

VI.3. [CONTRIBUTION TO THE NATIONAL ACTION PLAN](#)

Pillar 3: Support to Safety Assessment and Inspection

Result Table													
100%													
Process Performance Benchmark													
Nr.		Topic		Dev Step		Nat. Priority		Orientation		Rating (%)		95% Benchmark (%)	
80%													
Broad analysis													
Percent	50%	3.0	Support to Safety Review and Assessment.	70%	2		2	Process	60%	60		90	
		3.1	Support to Safety Review and Assessment.		2		2	Performance		70		90	
	40%	3.2	Support to Inspection.		3		2	Process		60		95	
					3		2	Performance		60		95	

Result of Evaluation

SWOT Analysis

Strengths/Preserve and Prevent

Support to Safety Review and Assessment.

Strengths	Action Plan
test	action plan 1
test2	action plan 2

Performance and reliability analysis.

Strengths	Action Plan
test3	action plan 3

Weakness/Mitigate

Thermohydraulic safety anaysis.

Weakness	Action Plan
It is a long established	23423

Opportunity/Capitalize and Enhance

Environmental protection analysis, impact assessment.

Opportunity	Capitalize and Enhance
sdfsdf	34435fcdcgdfg

Threat/Prevent

hazards analysis, e.g. Seismic analysis/structural analysis, site assessment.

Threat	Prevent
23	sdfsdf

TOSCA - Documentation – SWOT Analysis



My Justification/Documentation

Please check the justification list with all technical argumentation (documents) from the pillar questionnaires.



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 All Documents

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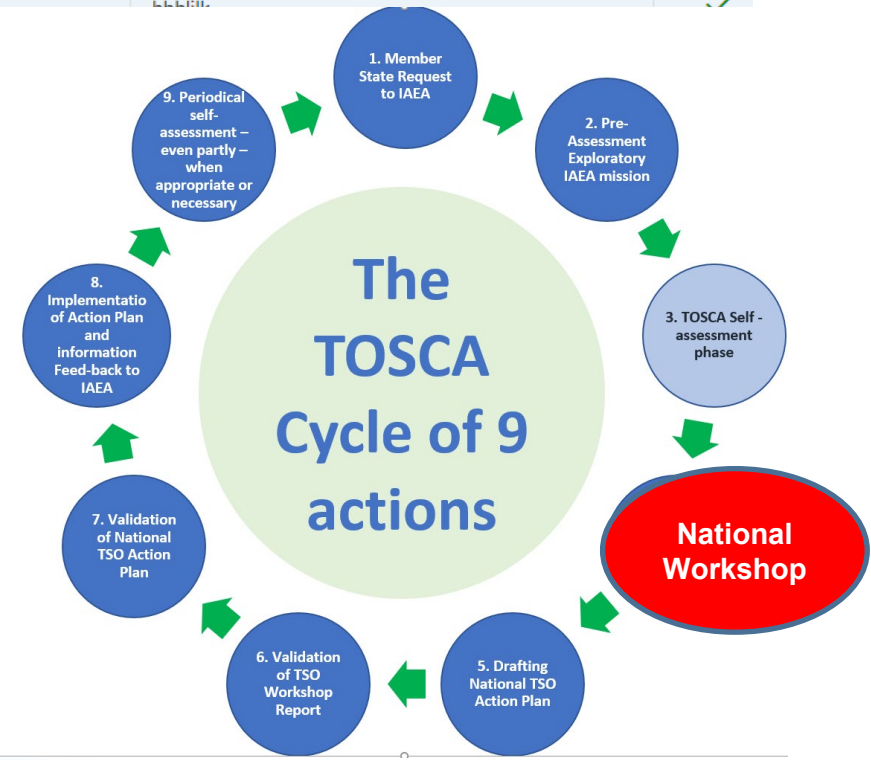
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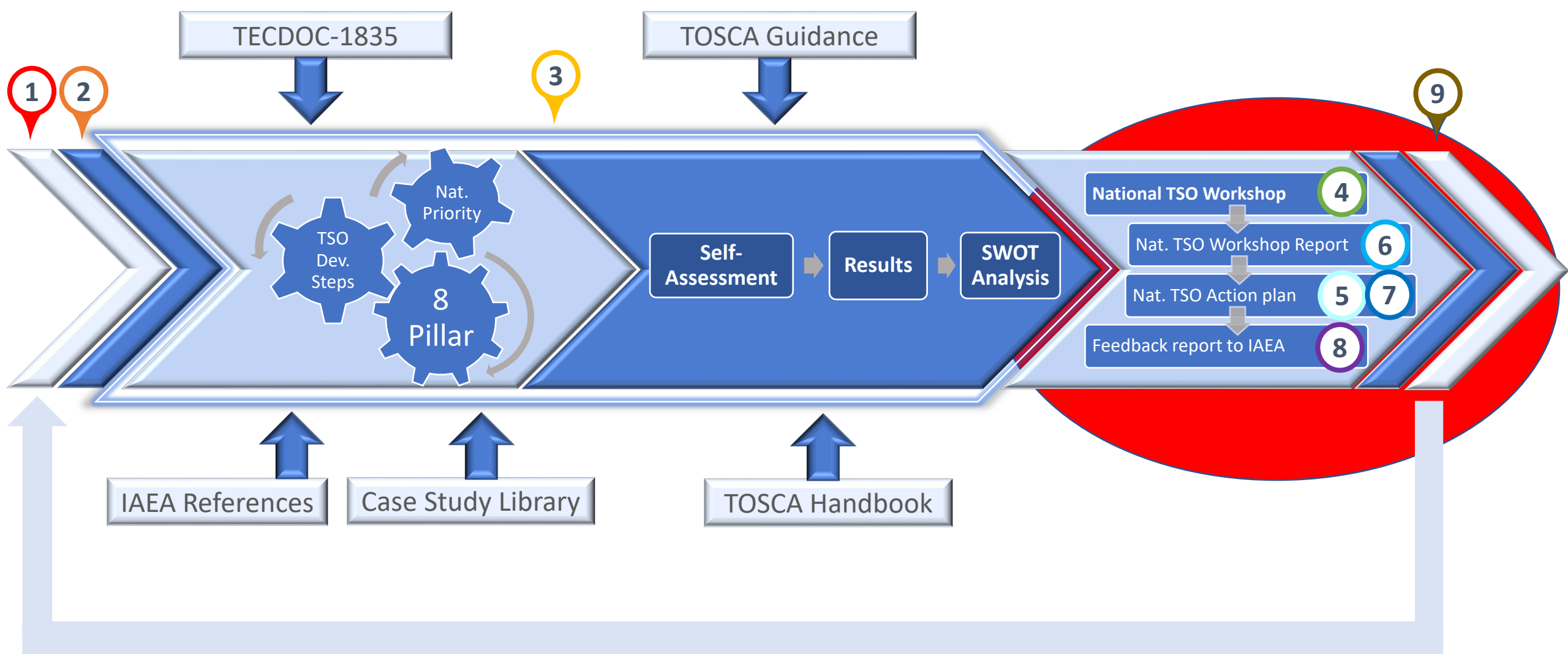
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			Diverse	14.10.2021	Cherry_Landscape.pdf		

SWOT Analysis as basis for the

- **National Workshop (4),**
- **National Workshop Report and**
- **National TSO Action Plan**





- | | | |
|---|-------------------------------------|--|
| 1 Member State Request to IAEA | 4 National TSO Workshop | 7 Validation of National TSO Action Plan |
| 2 Pre-Assessment Exploratory IAEA mission | 5 Drafting National TSO Action Plan | 8 Implementation of Action Plan and Feedback Report to IAEA |
| 3 TOSCA Self-assessment phase | 6 Validation of TSO Workshop Report | 9 Periodical self-assessment – when appropriate or necessary |



IAEA

International Atomic Energy Agency
Atoms for Peace and Development

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Thank you!

Thank You!

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