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International Atomic Energy Agency  
*Atoms for Peace and Development*

# Preparing for Regulatory Oversight: Establishing the Safety Infrastructure for a Nuclear Power Programme

**Mr. Stewart Magruder**

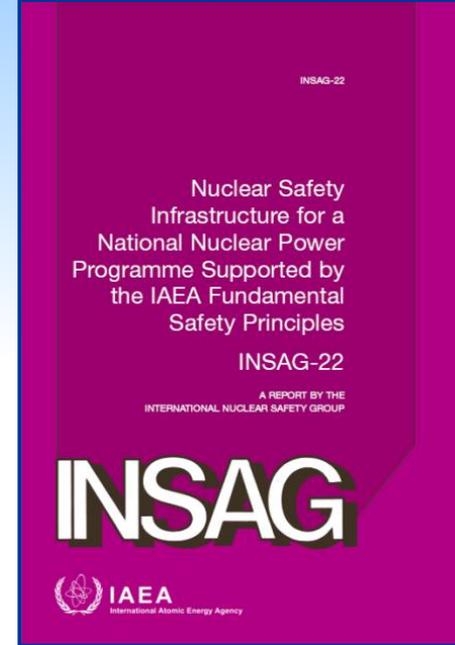
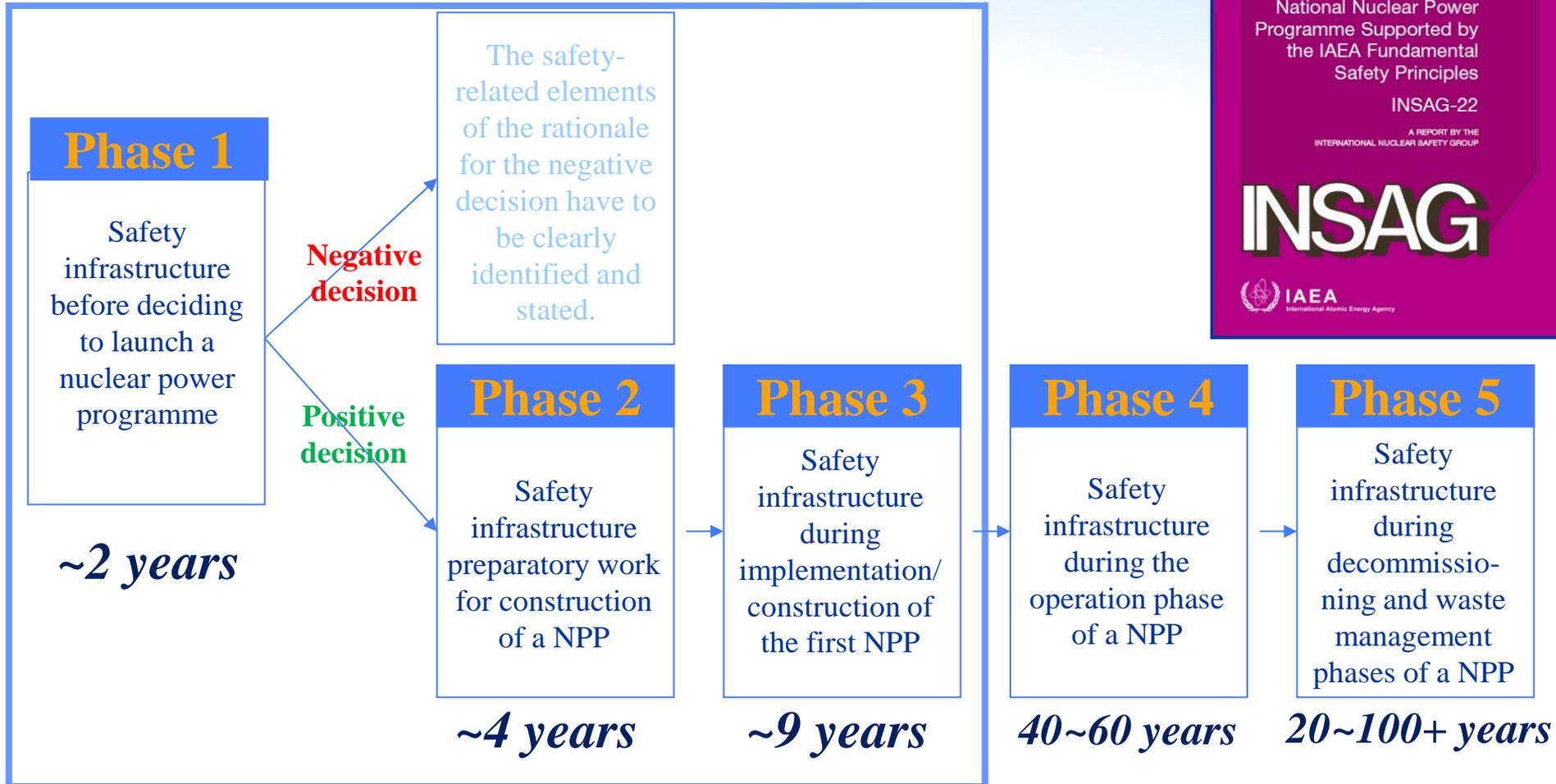
*Regulatory Activities Section  
Nuclear Safety and Security Department*

# CONTENT

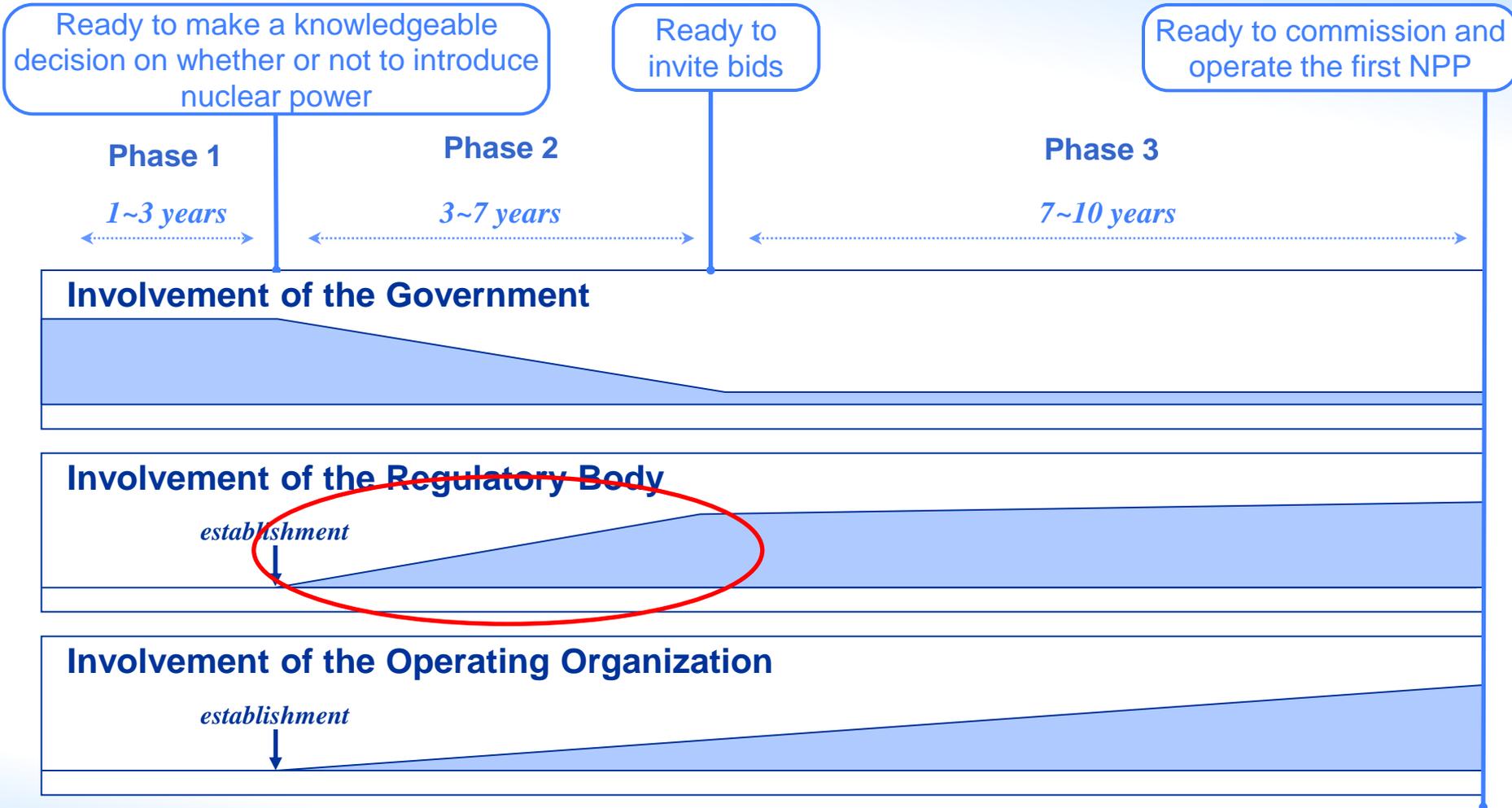


- Phased approach to developing a safety infrastructure
- Introduction to Safety Guide SSG-16
  - Structure
  - Characteristics
  - Format
  - Self-Assessment Methodology

# A phased approach to develop a nuclear safety infrastructure



# Main entities having responsibilities for implementation of an NPP



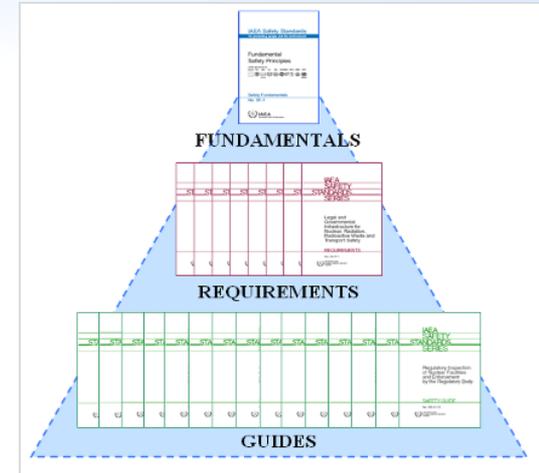
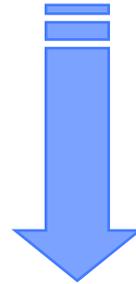
# Why a safety guide?



Increasing number of countries considering the introduction of nuclear power in the last decade

(having no or little experience in building, operating or regulating nuclear facilities)

SSG-16 is currently being revised



**IAEA Safety Standards**  
for protecting people and the environment

Establishing the  
Safety Infrastructure  
for a Nuclear Power  
Programme

Specific Safety Guide  
No. SSG-16

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- Need to establish an appropriate and comprehensive national safety infrastructure in compliance with the IAEA SSs for ensuring safety and gaining public trust at national and international level.

# The main 4 roles of SSG-16

**1. Road-map for gradual application of the relevant IAEA Safety Standards**

**2. Terms of Reference for the Safety Review Services**

**3. Training framework for embarking countries**

**4. Reference document for self-assessment of the national safety infrastructure**

IAEA Safety Standards  
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No. SSG-16





# GSR Part 1 (Rev 1)

# GSR Part 3

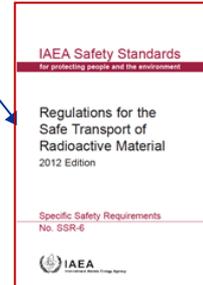
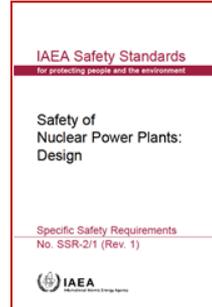
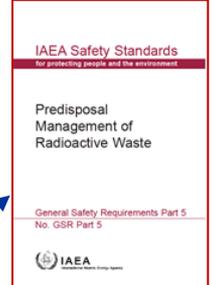
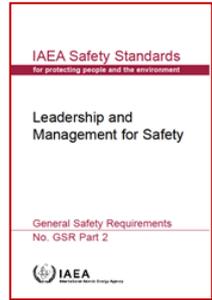
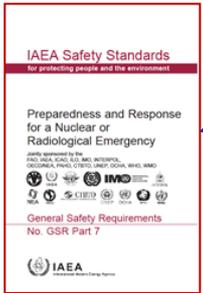
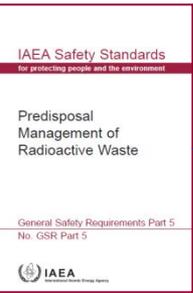
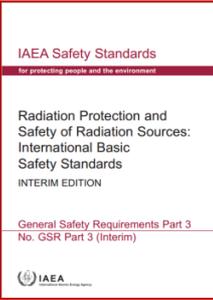
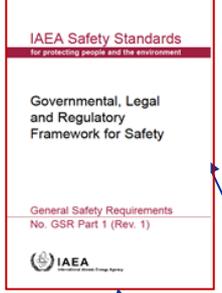
# Relation with the Safety Requirements

## The 20 elements/topics of SSG-16

- 1 - National policy and strategy
- 2 - Global nuclear safety régime
- 3 - Legal framework
- 4 - Regulatory framework
- 5 - Transparency and openness
- 6 - Funding and financing
- 7 - External support organizations and contractors
- 8 - Leadership and management for safety
- 9 - Human resources development
- 10 - Research for safety and regulatory purposes
- 11 - Radiation protection
- 12 - Safety assessment
- 13 - Safety of radioactive waste, spent fuel management and decommissioning
- 14 - Emergency preparedness and response
- 15 - Operating organization
- 16 - Site survey, site selection and evaluation
- 17 - Design safety
- 18 - Preparation for commissioning
- 19 - Transport safety
- 20 - Interfaces with nuclear security

*Establishing a Safety Infrastructure  
for a national nuclear power programme  
in compliance with the IAEA Safety Requirements*

**SSR-6**



**GSR Part 5**

**GSR Part 7**

**NS-R-3 (Rev 1)**

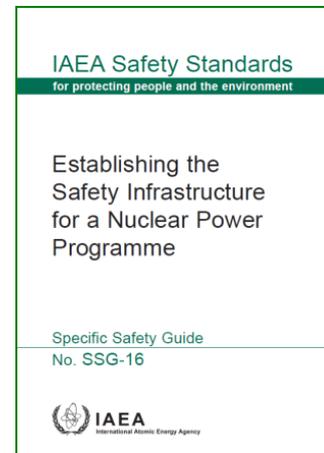
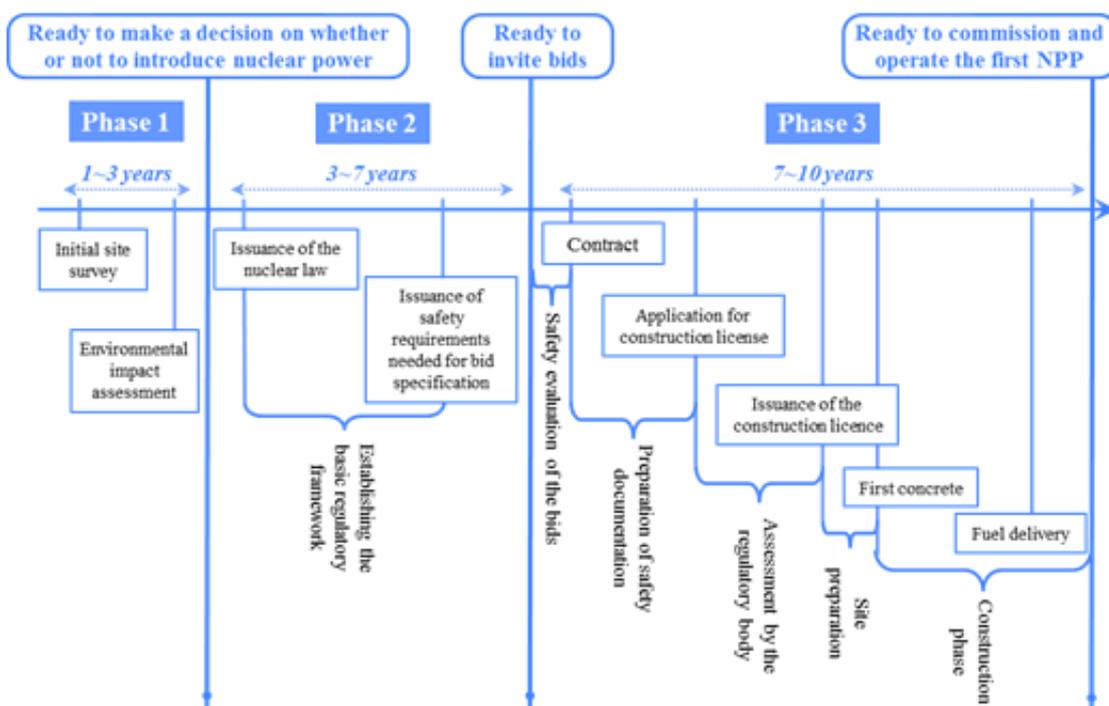
**GSR Part 2**

**GSR Part 4  
(Rev 1)**

**GSR Part 5**

**SSR 2/2 (Rev 1)**

**SSR 2/1 (Rev 1)**



for each relevant IAEA Safety Requirements publication, at which stages:

- there should be awareness of the requirements;
- implementation of the requirements should be started;
- requirements should be fully implemented.

Progressive application of IAEA safety requirements	GSR Part 1 – Governmental, Legal and Regulatory Framework for Safety
	GSR Part 2 – Leadership and Management for Safety (current GS-R-3)
	GSR Part 3 – Radiation Protection and the Safety of Radiation Sources (current BSS115)
	GSR Part 4 – Safety Assessment for Facilities and Activities
	GSR Part 5 – Predisposal Management of Radioactive Waste
	GSR Part 6 – Decommissioning and Termination of Activities (current WS-R-5)
	GSR Part 7 – Emergency Preparedness and Response (current GS-R-2)
	SSR 1 – Site Evaluation for Nuclear Installations (current NS-R-3)
	SSR 2.1 – Safety of Nuclear Power Plants: Design and Construction (current NS-R-1)
	SSR 2.2 – Safety of Nuclear Power Plants: Commissioning and Operation (current NS-R-2)
	SSR 6 – Safe Transport of Radioactive Material (current TS-R-1)

Awareness of the requirements
  Requirements under implementation
  Requirements implemented

The initial degree of the application of these requirements may vary from State to State depending on the use of radioactive sources and nuclear installations other than NPPs before considering the nuclear power option.

# Format of SSG-16

## Phase 1/2/3

–The following actions are recommended to be completed in this Phase as a step towards the full implementation of all relevant IAEA Safety Requirements:

- Requirements 1, 2, 3 and 4 of GSR Part 1;
- Requirement 2 of GSR Part 3;
- .....

–Actions (as “should” statements) are listed and numbered

Action 10: The **Government** should ...

Action 11: The **Regulatory Body** should ...

Action 12: The **Operating Organization** should ...

*Other actions...*

–additional text provides:

- *Rationale for the should statements;*
- *Additional guidance to satisfy the actions.*

# Self-Assessment against SSG 16



- **IRIS, Integrated Review of Infrastructure for Safety**
  - Question sets derived from actions
  - A user-friendly software (IRIS) developed to facilitate the conduct of the self-assessment
  - Training workshops on SSG-16, the self-assessment methodology and the utilization of the self-assessment software (IRIS),
  - Expert missions to assist preparation and/or implementation of action plans based on the self-assessment results.

# Why a self-assessment?

- **More than answering** a set of pre-defined **questions**
- a **learning and investigation process** to review the current status of an organisation or an infrastructure, the processes and performance against predefined criteria in order to identify areas for improvement of efficiency and effectiveness- **A tool to gain self-awareness in MSs progress towards establishment of effective and efficient safety infrastructure**
- an **opportunity to develop safety culture** across the involved organisations
- an integral part of the development of involved organizations aiming at excellence
- A **safety requirement** contained in GSR Part 2
- A **continuing process**

# The intent of a self-assessment

- **assess the current situation and progress** made to build up the safety infrastructure for a nuclear power programme
- **create a common understanding** among stakeholders of the progress made in the development of the safety infrastructure
- **identify gaps between the current situation and expected status** of the national safety infrastructure, and list areas where improvement is needed
- **take appropriate actions to strengthen the current safety infrastructure** if necessary, in order to comply with IAEA standards
- Prepare an **action plan** for an implementation strategy



# Self-assessment questions

- For each action, one primary question and subsidiaries to develop some aspects of the answer
  - Primary question
    - Has the Government recognized the need for an effectively independent and competent Regulatory Body, and considered the appropriate position of the Regulatory Body in the State's Governmental and legal framework for safety?
  - Subsidiary question
    - What are the role and responsibilities going to be assigned to the future regulatory body?

National Policy and Strategy

Global nuclear safety regime

Legal framework

Regulatory framework

Transparency and openness

Funding and financing

External support organizations and contractors

Leadership and management for safety

Human resources development

Research for safety and regulatory purposes

Radiation Protection

Safety assessment

Safety of radioactive waste, spent fuel management and decommissioning

Emergency preparedness and response

Operating organization

Site survey, site selection and evaluation

Design safety

Preparation for commissioning

Transport safety

Interfaces with nuclear security

# Resource intensive – requires a strong commitment national commitment



## The Government should

- **commit itself to complete the self-assessment** in accordance to an agreed scope
- ensure that SA is performed at a **meaningful stage** in the NPP so that benefits from the SA can be expected
- ensure **coordination arrangements** to be established and implemented between organizations taking part in the SA

## The Regulatory Body should

- **allocate adequate resources** for completion of the SA
- encourage staff to **perform the SA in a frank and honest manner** and in a blame free environment
- consider the SA conclusions in a frank and transparent way in a no-blame culture
- **fully implement the resultant action plan**

# IRIS Responsibilities



- Each organisation
  - Develop recommendations
  - Develop tentative actions, including resources and responsibilities
  - Sent to the Project Manager (PM)
- Project manager
  - Establish an Integrated action plan to be reviewed by the Coordination Group
- Each organisation
  - Develop is local action plan in order to implement the IWP

**Implement the Action Plan!**

# CONCLUSION



*“The Agency has a key role to play in ensuring that this expansion in nuclear power takes place in an efficient, responsible and sustainable manner.”*

# International Atomic Energy Agency



*Thank you for your attention!!!*

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