

IAEA SAFETY STANDARDS, GSR PART 2, RESPONSIBILITY FOR SAFETY

**Regional Workshop on the development and
implementation of effective IMS based on GSR Part 2**

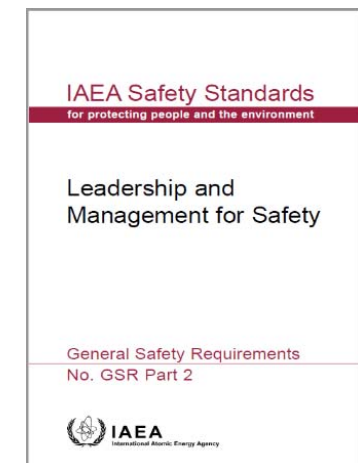
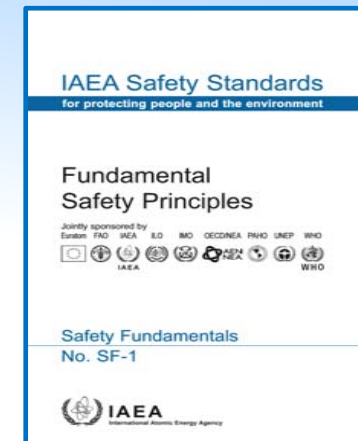
**Jakarta, Indonesia
31 July-04 August 2023**

**Regulatory Activities Section
Division of Nuclear Installation Safety (NSNI)
International Atomic Energy Agency (IAEA)
Department of Nuclear Safety & Security**

Learning Objectives

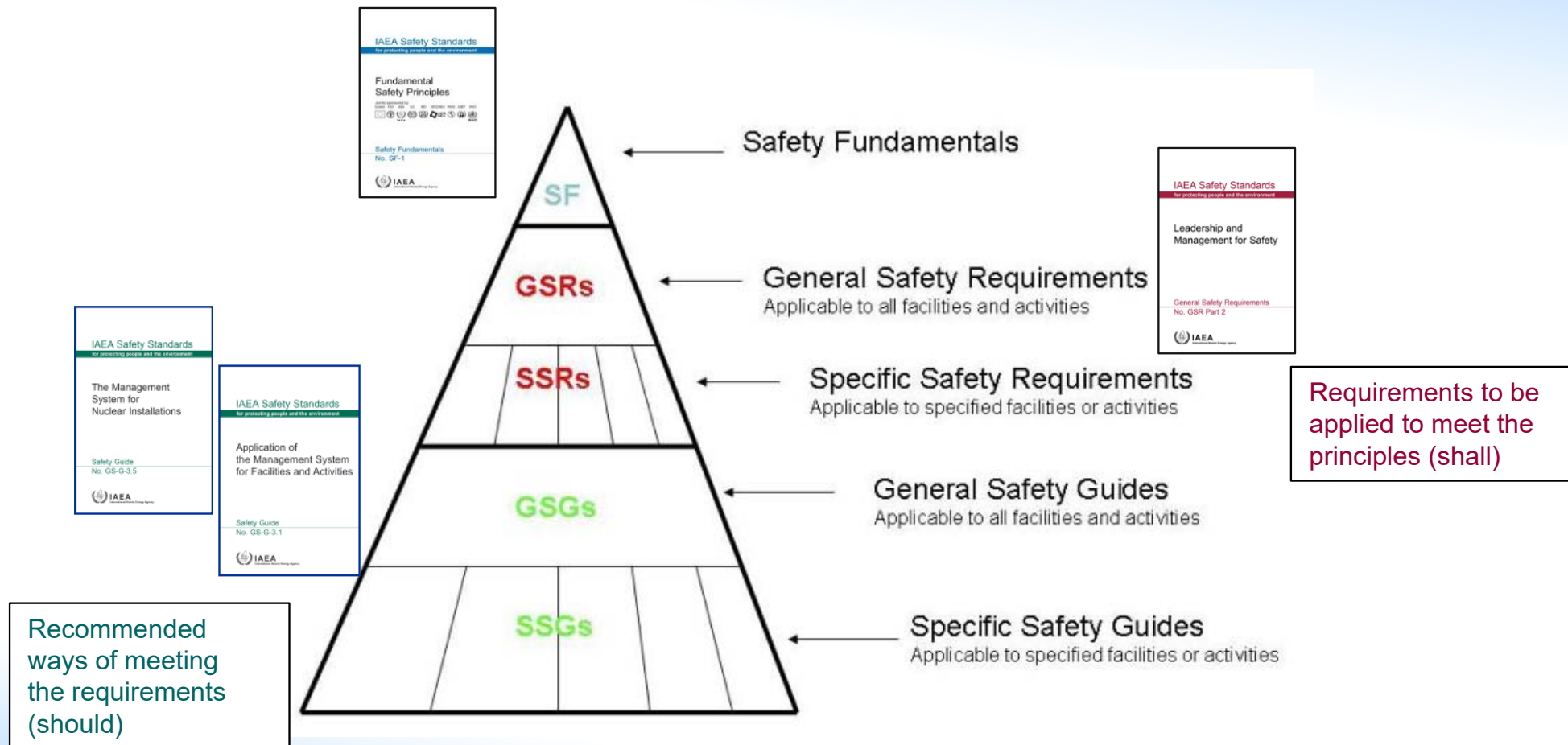
This presentation will enable participants to understand:

- Structure of IAEA Safety Standards and publications
- The purpose, applicability and content of GSR Part 2 Leadership and Management for Safety
- Responsibility for safety as a Principle 1



IAEA Safety Standards and Publications

IAEA Safety Standards Hierarchy



IAEA Safety Standards



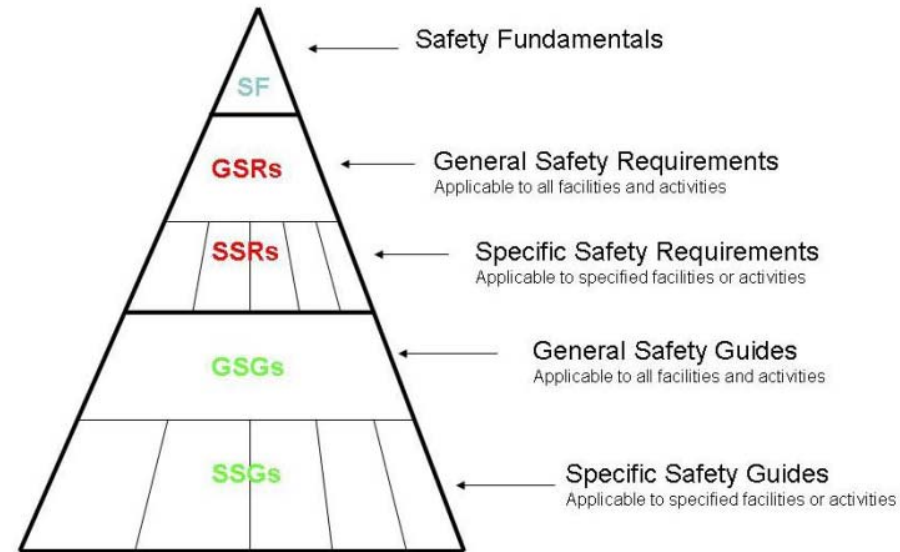
The IAEA Safety Standards represent international consensus on what constitutes a high level of safety.

They cover all the areas important to the safety of facilities and activities and help member states to comply with international legal instruments on nuclear safety (conventions).

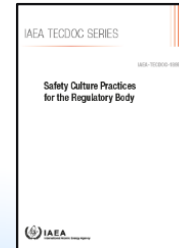
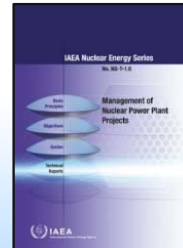
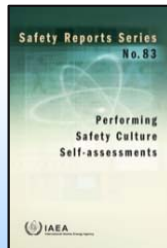
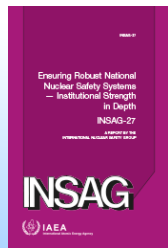
They form the basis for the IAEA safety review services and assistance.

**global reference point
for a high level of safety**

IAEA Publications Hierarchy



INSAG, Safety Report Series, Nuclear Energy Series, Service Series, TECDOCs,...



Safety Fundamentals: Safety Objective and Principles



Safety objective: The fundamental safety objective is to protect people and the environment from harmful effects of ionizing radiation

Principle 1: Responsibility for safety

Principle 2: Role of government

Principle 3: Leadership and management for safety

Principle 4: Justification of facilities and activities

Principle 5: Optimization of protection

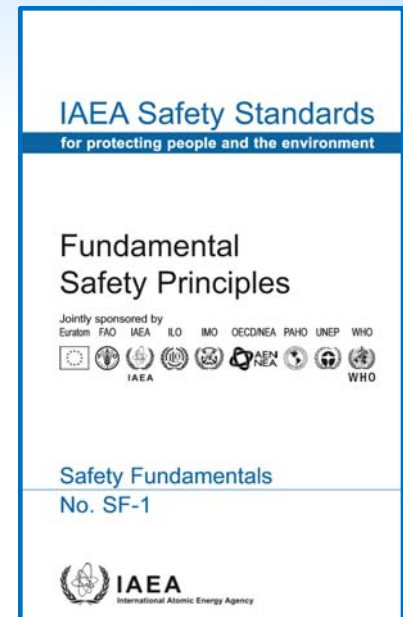
Principle 6: Limitation of risks to individuals

Principle 7: Protection of present and future generations

Principle 8: Prevention of accidents

Principle 9: Emergency preparedness and response

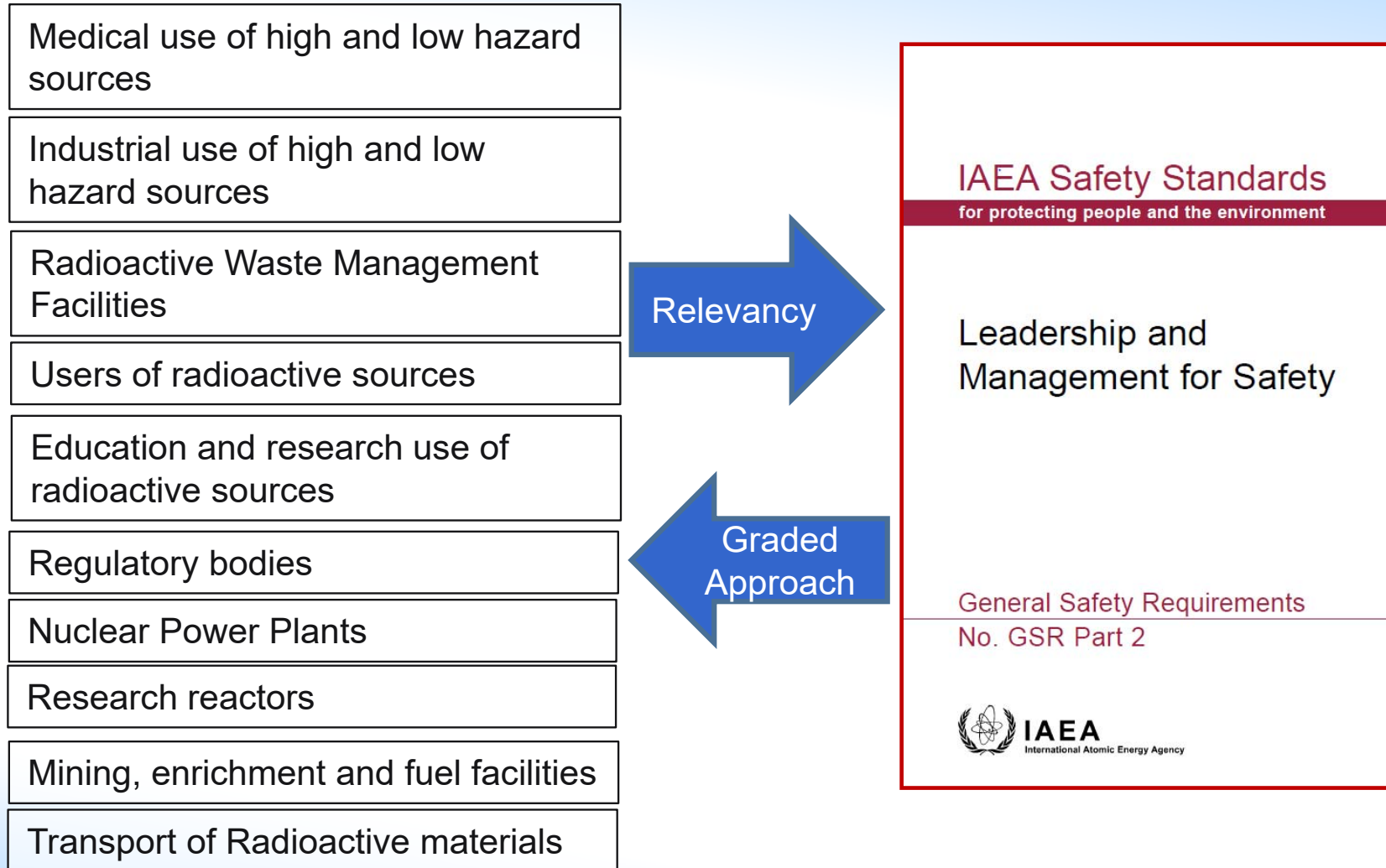
Principle 10: Protective actions to reduce existing or unregulated radiation risks



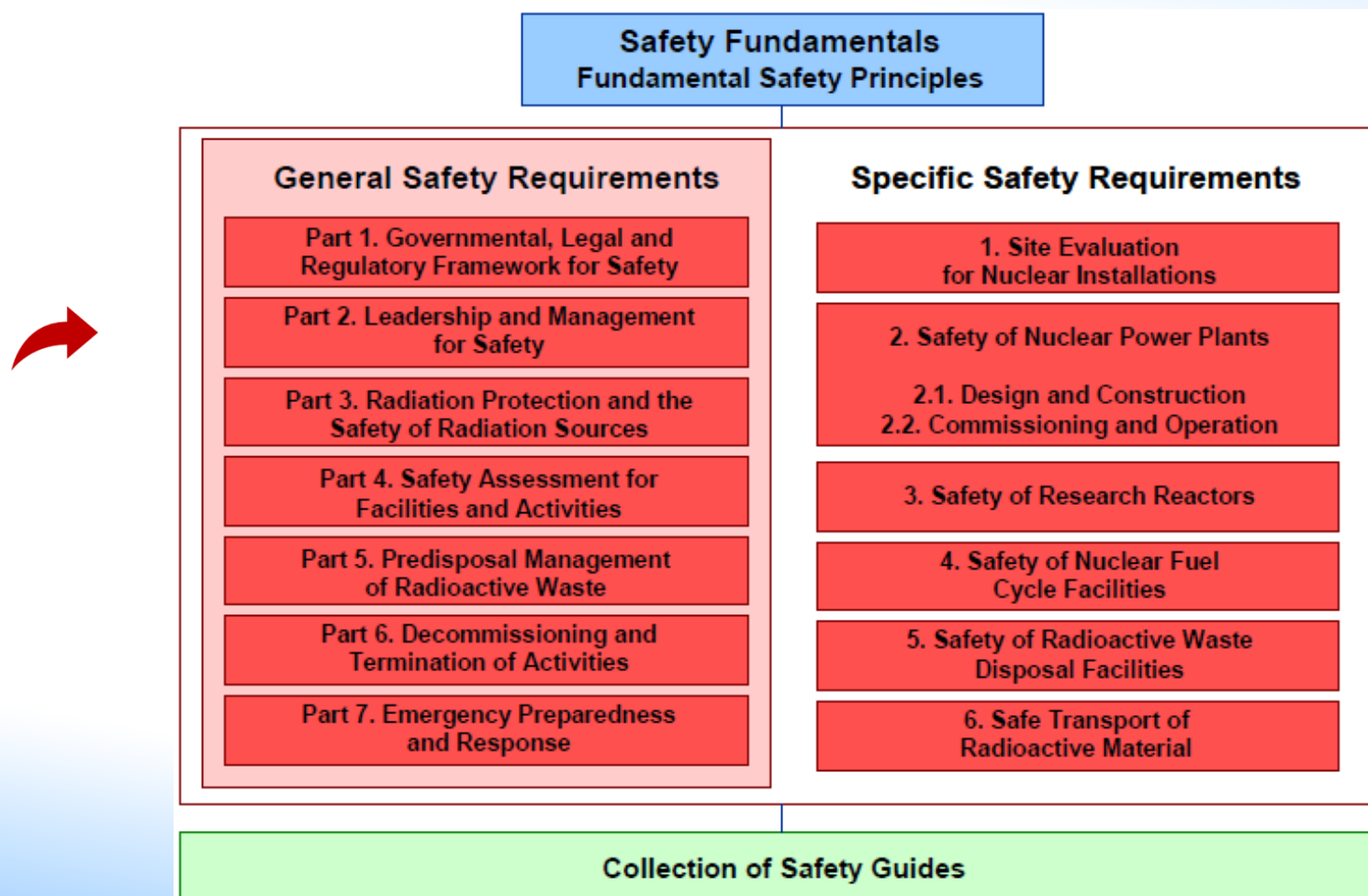
GSR Part 2

Leadership and Management for Safety

GSR Part 2



Comprehensive Collection of Safety Requirements



GSR Part 2 Balance of 3 elements



How is safety culture supported or captured in the management system?
How does leadership support safety culture?
How does leadership support the management system?

Definitions



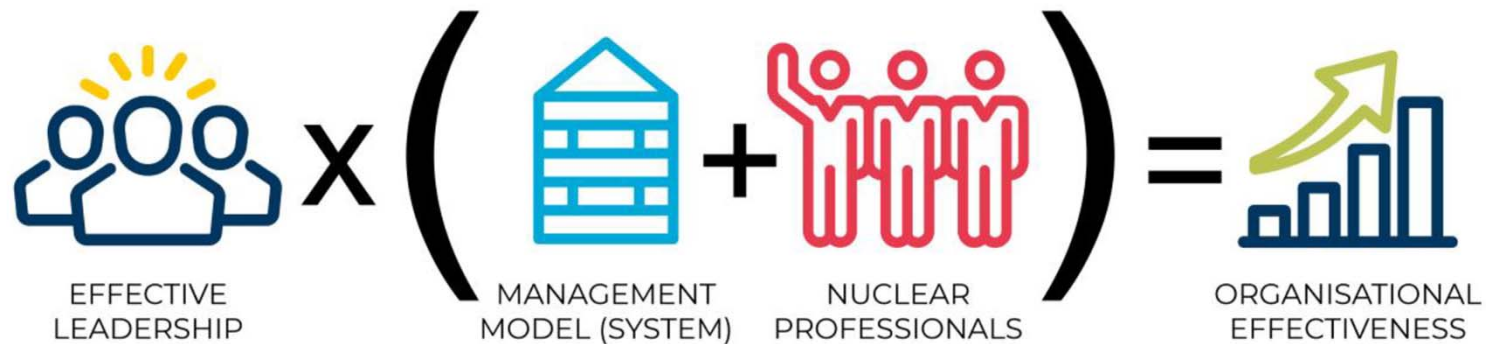
“Management” is a formal, authorized function for ensuring that an organization operates efficiently, and that work is completed in accordance with requirements, plans and resources.

“Leadership” is the use of an individual’s capabilities and competences to give direction to individuals and groups and to influence their commitment to achieving the fundamental safety objective and to applying the fundamental safety principles, by means of shared goals, values and behaviour.

Managers at all levels need to be leaders for safety.

WANO PRINCIPLES

PL 2019-01 Nuclear Leadership Effectiveness Attributes



Overview of GSR Part 2 Requirements

14 requirements in 5 sections

1 Responsibility for safety

2 Leadership for safety

3,4,5,6,7,8, 9,10,11 Management for safety

12 Culture for safety

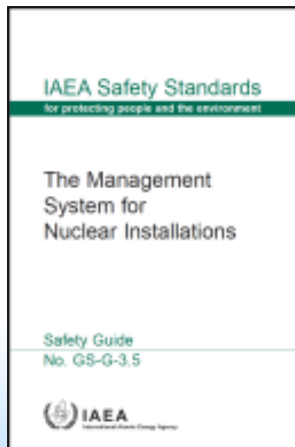
13,14 Measurement, assessment and improvement

Safety Guides supporting GSR Part 2



Under revision

DS513 “Leadership, Management and Culture for Safety”



Revision planned after DS513
“Leadership, Management and Culture for Safety” revision is finished

Responsibility for Safety

What is unique in nuclear power industry

Physical principle of electricity production from nuclear is unique = chain fission reaction which releases thermal energy but also radiation

Ionizing radiation causes radiation risks:

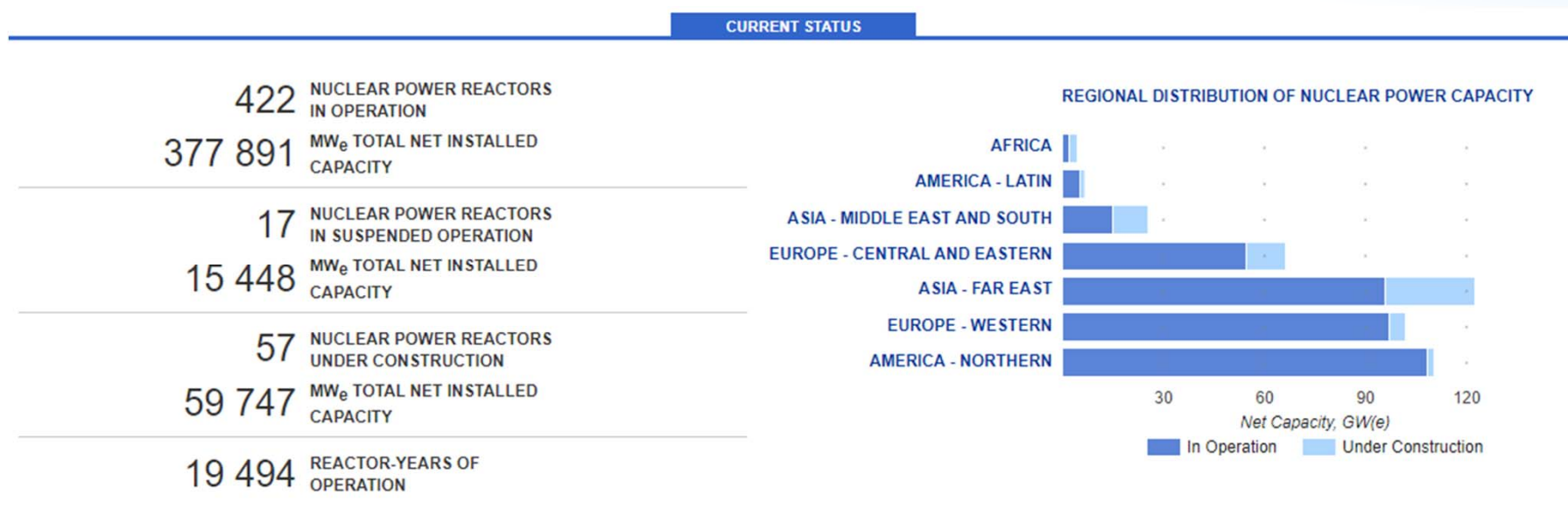
- ✓ during normal operation very low to employees (doses limits, ALARA concept) and to environment (controlled radionuclides releases into air and water); **very high probability versus very low risk**
- ✓ during large accidents possible threat to employees, population and environment; accident planning and measures needed – for example Iodine prophylaxis, sheltering, evacuation, relocation, restriction of agricultural production consumption, etc.; **very low probability versus very high risk**

Materials and media which are close to fission reaction are radioactive – spent fuel + radioactive wastes

Key response to risk rests on **robust nuclear knowledge and competencies, robust and efficient management system** (integrating nuclear safety, radiation protection and many other elements) and **healthy safety culture** and **excellent leadership for safety**.

Several thousands reactor-years of safe operation

Contribution to electricity demand satisfaction, climate protection, security of energy supplies



Statistics from PRIS– Power Reactor Information System

2023-03-27

But there are also historical mementos – severe accidents

- A1 Jaslovske Bohunice (Czechoslovakia)
- Three Mile Island (USA)
- Chernobyl (USSR)
- Fukushima (Japan)



Definitions

“Safety” means the protection of people and the environment against radiation risks, and the safety of facilities and activities that give rise to radiation risks. **“Safety”** used in the IAEA safety standards includes the safety of nuclear installations, radiation safety, the safety of radioactive waste management and safety in the transport of radioactive material; it does not include non-radiation-related aspects of safety.

“Safety” is concerned with both radiation risks under normal circumstances and radiation risks as a consequence of incidents, as well as with other possible direct consequences of a loss of control over a nuclear reactor core, nuclear chain reaction, radioactive source or any other source of radiation. Safety measures include actions to prevent incidents and arrangements put in place to mitigate their consequences if they were to occur.

“Incidents” include initiating events, accident precursors, near misses, accidents and unauthorized acts (including malicious acts and non-malicious acts).”

Overview of GSR Part 2 Requirements

14 requirements in 5 sections



1

Responsibility for safety

2

Leadership for safety

3,4,5,6,7,8, 9,10,11 **Management for safety**

12

Culture for safety

13,14

Measurement, assessment and improvement

Responsibility for safety

This section has one requirement

Requirement 1: Achieving the fundamental safety objective

The registrant or licensee - starting with the senior management - shall ensure that the fundamental safety objective of protecting people and the environment from harmful effects of ionizing radiation is achieved.

Safety Fundamentals Principle 1: Responsibility for Safety / 1

Principle 1: Responsibility for safety

The prime responsibility for safety must rest with the person or organization responsible for facilities and activities that give rise to radiation risks.

3.3. The person or organization responsible for any facility or activity that gives rise to radiation risks or for carrying out a programme of actions to reduce radiation exposure has the prime responsibility for safety.

3.5. The licensee retains the prime responsibility for safety throughout the lifetime of facilities and activities, and this responsibility cannot be delegated.

Other groups, such as designers, manufacturers and constructors, employers, contractors, and consignors and carriers, also have legal, professional or functional responsibilities with regard to safety.

Safety Fundamentals Principle 1: Responsibility for Safety / 2

3.6. The licensee is responsible for:

- Establishing and maintaining the necessary competences;
- Providing adequate training and information;
- Establishing procedures and arrangements to maintain safety under all conditions;
- Verifying appropriate design and the adequate quality of facilities and activities and of their associated equipment;
- Ensuring the safe control of all radioactive material that is used, produced, stored or transported;
- Ensuring the safe control of all radioactive waste that is generated.

These responsibilities are to be fulfilled in accordance with applicable safety objectives and requirements as established or approved by the regulatory body, and their fulfilment is to be ensured through the implementation of the management system.

Summary



We understand:

- Structure of IAEA Safety Standards and publications
- The purpose, applicability and content of GSR Part 2 Leadership and Management for Safety
- Responsibility for safety as a Principle 1



Thank you 😊

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