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IAEA Safety Standards and their Role IAEA Response to the TEPCO' s Fukushima Daiichi NPPs Accident

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AUSTRIA

IAEA NUCLEAR ENERGY POLICY MANAGEMENT SCHOOL
Module 1: Nuclear Energy Policy and Management

Abdus Salam International Centre for Theoretical Physics (ICTP)
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IAEA Safety Standards and their Role
IAEA Response
to the TEPCO's Fukushima Daiichi NPPs Accident

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Department of Nuclear Safety and Security

IAEA
International Atomic Energy Agency

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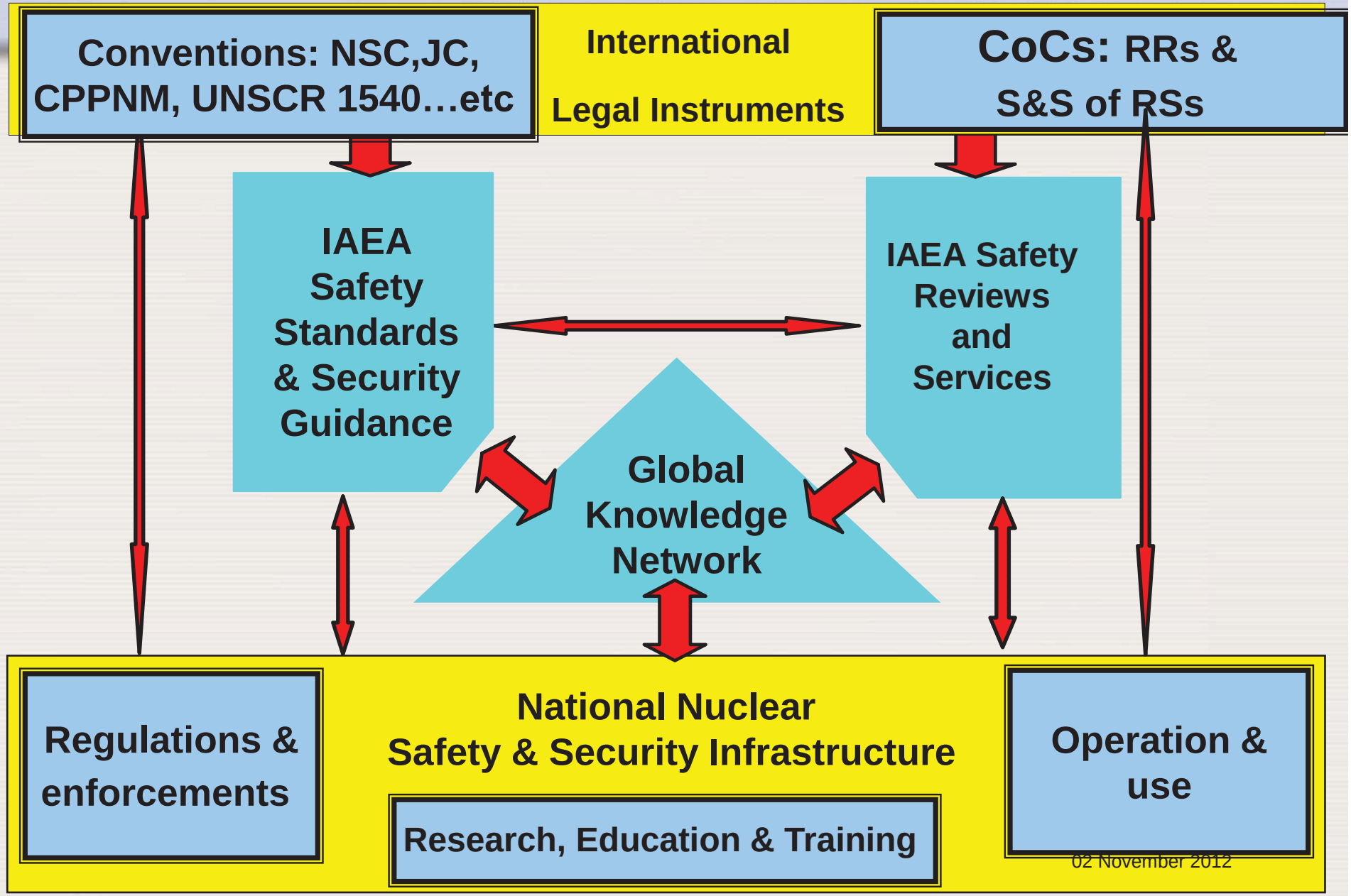
- IAEA Response to the TEPCO's Fukushima Daiichi NPPs accidents
  - Ministerial Conference
  - Nuclear Safety Action Plan
  - Convention on Nuclear Safety
  - Review and revision of the IAEA Safety Standards
- Concluding remarks

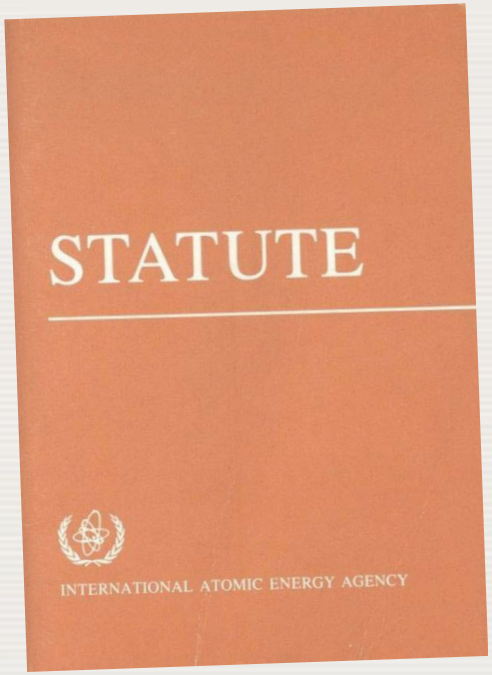
IAEA Safety Standards

Global Nuclear Safety & Security Regime



History – IAEA Statute

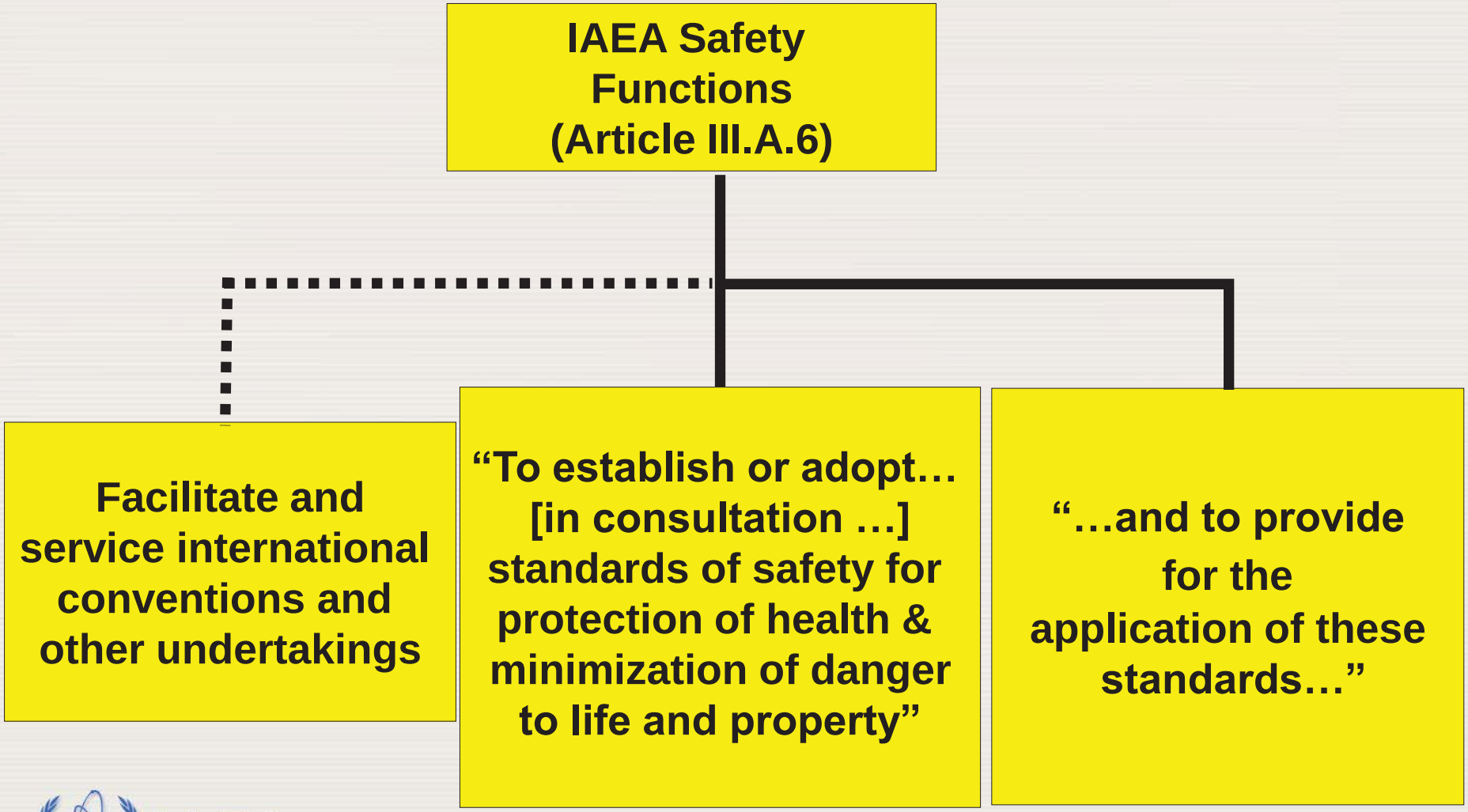
Under Article III.A.6 of its Statute, the IAEA is authorized:



"To establish or adopt, in consultation and, where appropriate, in collaboration with the competent organs of the United Nations and with the specialized agencies concerned, standards of safety for protection of health and minimization of danger to life and property."

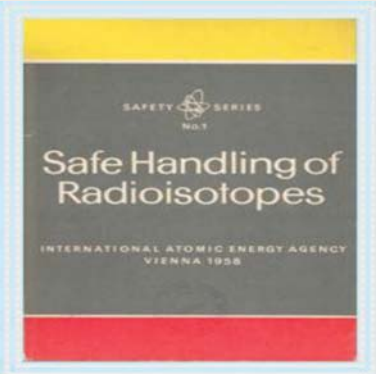
In 1958, the IAEA published its first Safety Standard, Safety Series No. 1, ***Safe Handling of Radioisotopes***. Over the years, some 200 publications were issued in the Safety Series.

History – IAEA Safety Functions



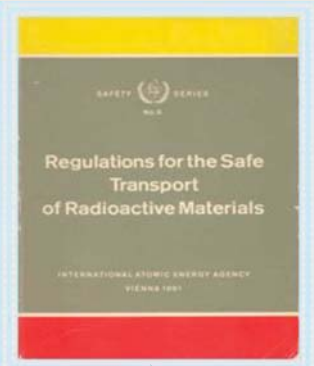
History

Safe Handling of Radioisotopes



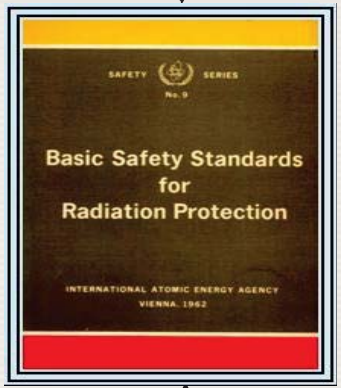
1958

Safe Transport of Radioactive Material



1961

BSS for Radiation Protection



1962

Radioactive Waste Disposal into the Ground

1965

IAEA

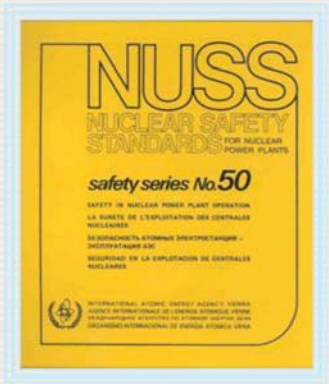
History

1958 - 1973

- Bottom-up approach
- Collection of experience in safety practices and guides
- Identification of the requirements

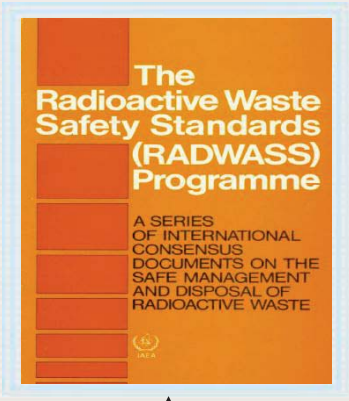
History (cont'd)

NUSS Programme



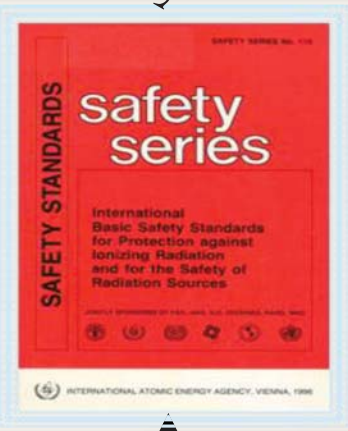
1974

RADWASS Programme



1988

Basic Safety Standards



1996

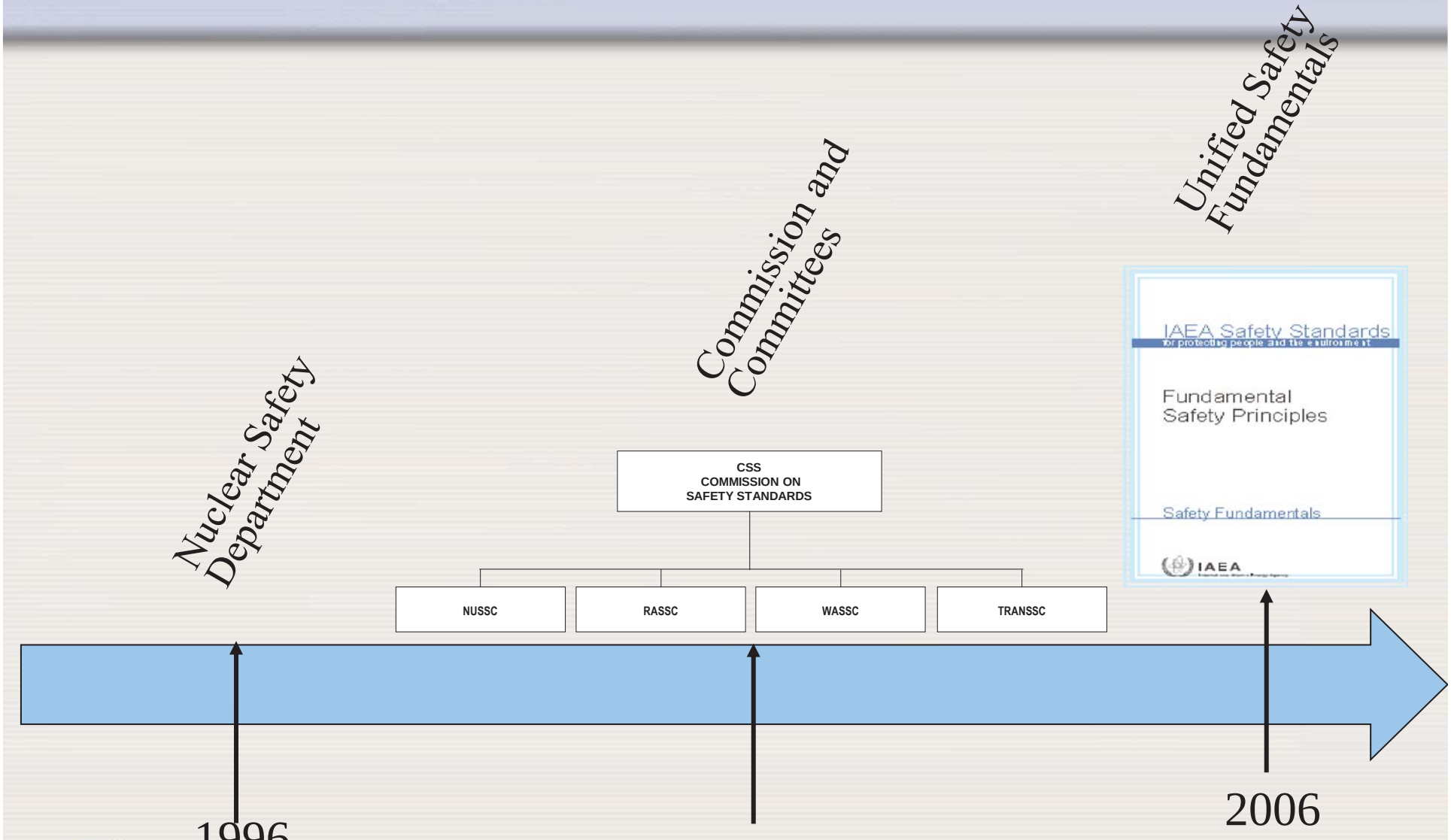
IAEA

History

1974 - 1996

- Four structured programmes
- Bottom-up approach
- Issuance of three Safety Fundamentals

History (cont'd)



History

1996 - 2011

1996 - Establishment of the Department of NS:

- ✓**Harmonized processes involving the Commission and the four Committees; and**
- ✓**Preparation of an overall structure of Safety Standards.**

2006 - Unified Safety Fundamentals: **beginning of a top-down approach**

2008 - Roadmap on the long term structure and format of SR approved by CSS: **integration and better user-friendliness**

2009-2011 – Joint Advisory Group on Nuclear Security – Commission on Safety Standards Task Force

Peace Prize for 2005

"The... Committee has decided that the Nobel Peace Prize for 2005 is to be shared... between the IAEA and its Director General...

- for their efforts to prevent nuclear energy from being used for military purposes, and
- to ensure that nuclear energy for peaceful purposes is used in the safest possible way."

" At a time …when there is a danger that nuclear arms will spread both to states and to terrorists groups, and when nuclear power again appears to be playing an increasingly significant role, IAEA's work is of incalculable importance."

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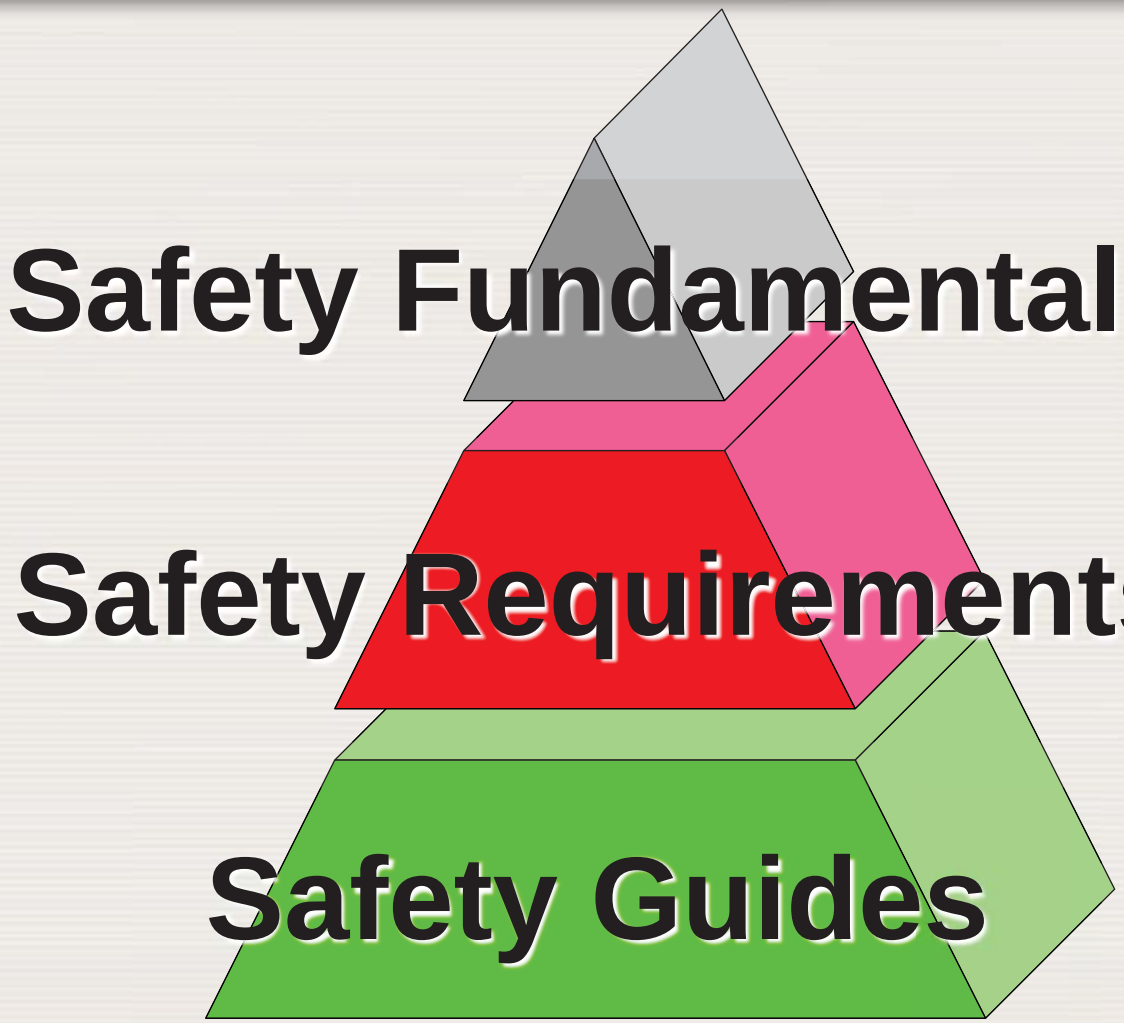
Status of the IAEA Safety Standards

Safety Standards are:

- Non binding on Member States but may be adopted by them
- Binding for IAEA's own activities
- Binding on States in relation to operations assisted by the IAEA or States wishing to enter into project agreements with IAEA

Safety Standards Categories



Safety Standards Categories

Fundamental safety objective and principles for protecting people and environment

Requirements that must be met to ensure protection of people and environment – 'shall'

Safety Guides

Recommended ways of meeting the requirements

IAEA

Fundamental Safety Objective and Fundamental Safety Principles (1/2)

Unified Fundamental Safety Principles

Principle 1: Responsibility for safety

Principle 2: Role of government

Principle 3: Leadership and management of safety

Principle 4: Justification of facilities and activities

Principle 5: Optimization of Protection

Fundamental Safety Objective and Fundamental Safety Principles (2/2)

Unified Fundamental Safety Principles

Principle 6: Limits on risks to individuals

Principle 7: Protection of present and future generations and the environment

Principle 8: Prevention of accidents

Principle 9: Emergency preparedness and response

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

Current Status of the Safety Standards

Since the establishment of the Safety Standards Series

- Safety Fundamentals issued in 2006
- Safety Requirements established from 1996 to 2010
- In total 112 safety standards published

Updated “Status of Safety Standards” on the web site
http://www-ns.iaea.org/committees/files/CSS/205/status.pdf

- Includes hyperlinks to the published safety standards in official languages

- Includes general information and a link to the IAEA Safety Glossary

SPESS

- SPESS: Strategies and Processes for the Establishment of the IAEA Safety Standards

  http://www-ns.iaea.org/downloads/standards/spess.pdf
- The objective of this document is to describe the strategies, the processes and associated responsibilities for the planning, development, review and revision, approval and establishment of the IAEA safety standards.
- The intent is to document and strengthen the process which started with the establishment of the Commission on Safety Standards and the Safety Standards Committees in 1996, in order to achieve by the end of 2015 and maintain beyond this time:
  - A genuine integration of all areas in the Safety Standards Series, using a top-down approach based on the unified Safety Fundamentals;
  - A rationalization of the Series with a reasonable and manageable number of Safety Guides;
  - A significant improvement in ‘user-friendliness’; and
  - A rigorous and efficient process for the establishment of additional standards and the revision of existing ones.
- It is expected that these factors cumulatively will result in a major change in the use and application of the safety standards in the Member States.

IAEA SAFETY STANDARDS – THE VISION

THE IAEA SAFETY STANDARDS: A GLOBAL REFERENCE FOR PROTECTING PEOPLE AND THE ENVIRONMENT

An integrated, comprehensive and consistent set of up-to-date, user friendly and fit-for-purpose IAEA safety standards of a high quality.

Using and applying the IAEA safety standards will provide for a worldwide harmonized high level of protection for people and the environment from harmful effects of ionizing radiation.

BASIC STRATEGIES

A. Clear categories

B. Clear, logical and integrated structure

C. Clear scope

D. Consensus at the highest level

E. User friendliness

F. Manageable number of safety standards

G. Clarity, rigour and efficiency of the processes

H. Involvement of stakeholders

I. Effective feedback mechanisms

J. Harmonized terminology

K. Promotion of the IAEA safety standards

L. Synergy and Interface between safety and security

BASIC STRATEGIES IN ACHIEVING THE VISION

A. Clear categories

The structure of the safety standards reflects the ten Fundamental Safety Principles and the "Roadmap on the long-term structure of the safety standards" of May 2008.

SAFETY REQUIREMENTS. General Safety Requirements are complemented by a series of facility and activity specific Safety Requirements.

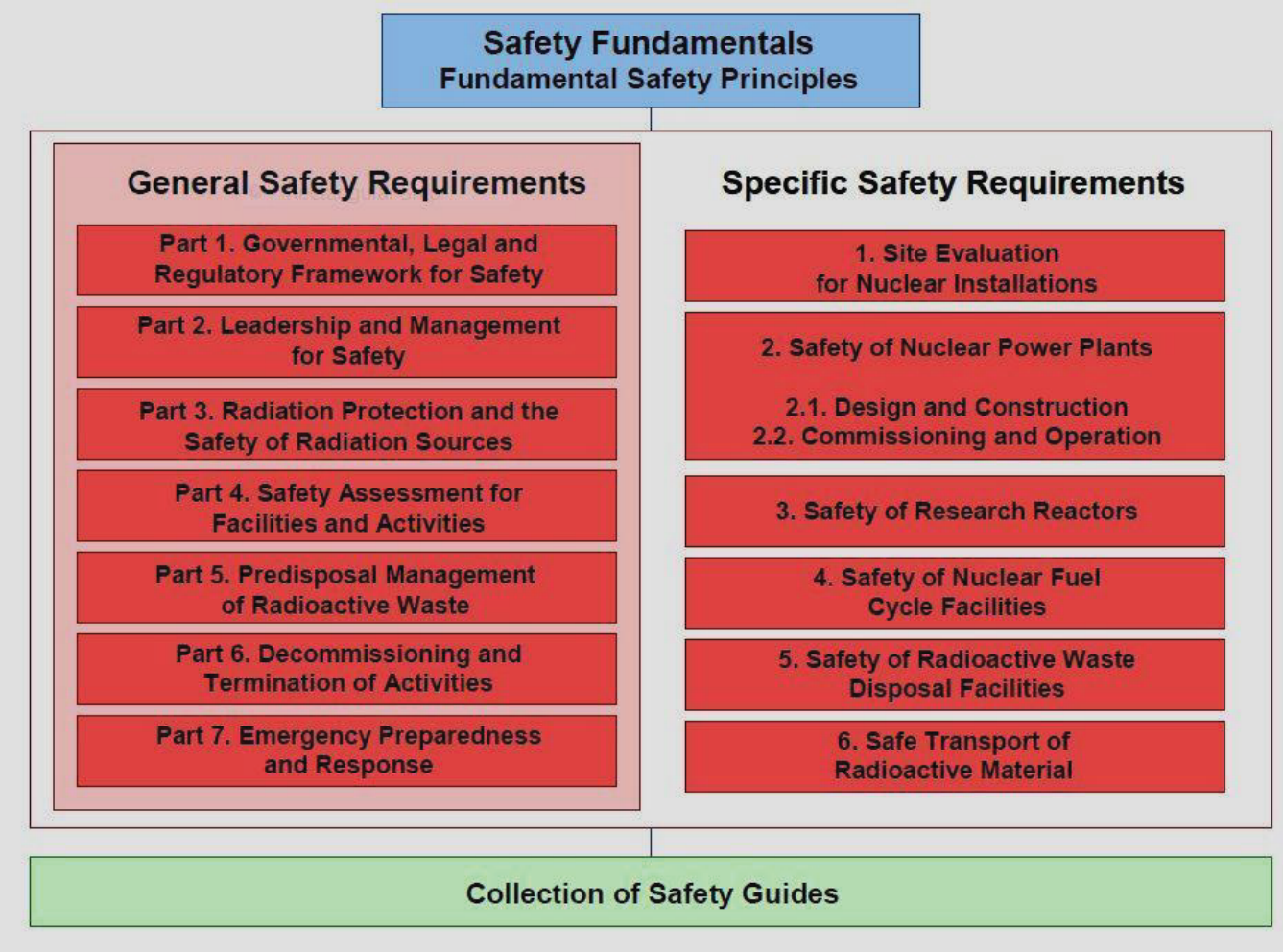
The Requirements address what must be done while the Guides will address how this may be achieved.

SAFETY GUIDES. Safety Guides implement several requirements and thus allow for the optimization of the whole set of guides.

There should be one Safety Guide for each important theme, unless a justification is provided for the need for a separate Guide or if combining too many topics for a single theme would not be practicable.

BASIC STRATEGIES IN ACHIEVING THE VISION

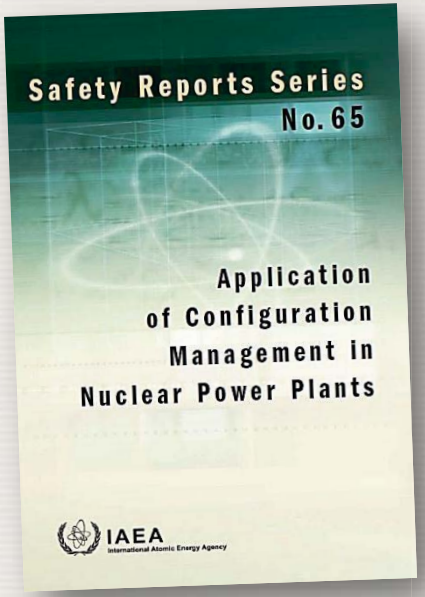
B. Clear, logical and integrated structure

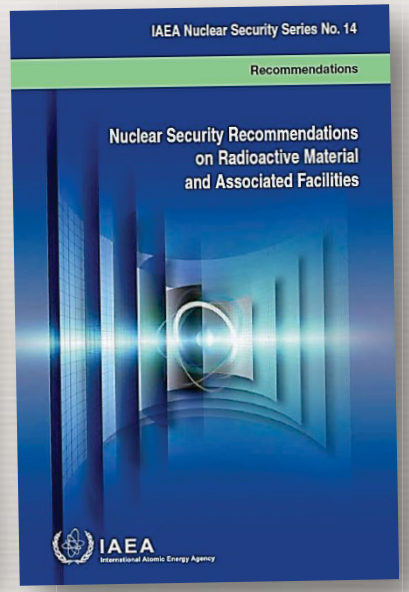


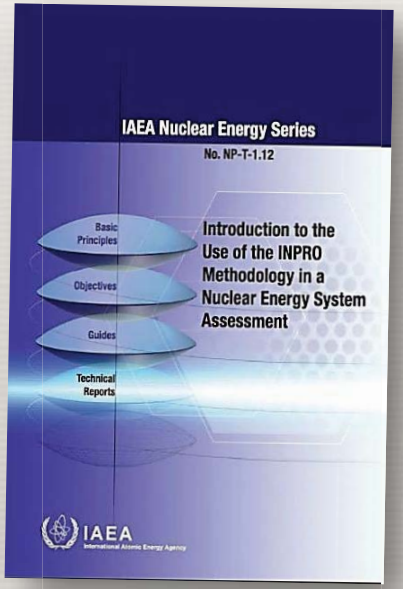
BASIC STRATEGIES IN ACHIEVING THE VISION

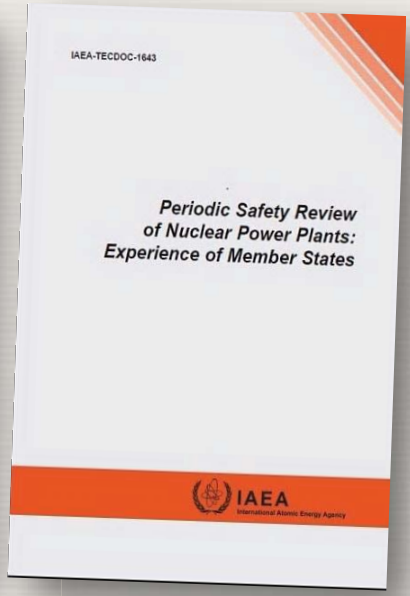
C. Clear scope

Beyond Safety Standards Series publications, the IAEA publishes *Safety Reports*, books in the *Nuclear Security Series* and in the *Nuclear Energy Series* and *TECDOCs*; each series has its scope.









BASIC STRATEGIES IN ACHIEVING THE VISION

D. Consensus at the highest level

The Commission on Safety Standards and the Committees were established with the objective of achieving consensus, quality, coherence and consistency in the development of international standards for safety.

IAEA safety standards are developed in close consultation with Member States and with representatives of relevant international organizations.

Approval by the Board of Governors is required for Safety Fundamentals and Safety Requirements.

The authority to establish Safety Guides has been delegated to the IAEA Director General.

BASIC STRATEGIES IN ACHIEVING THE VISION

E. User friendliness

The principal users of safety standards are regulatory bodies and other relevant national authorities.

The safety standards are also used by individuals, co-sponsoring organizations, organizations that design, manufacture and operate nuclear facilities, and organizations involved in the use of radiation related technologies.

BASIC STRATEGIES IN ACHIEVING THE VISION

F. Manageable number of safety standards

OVER THE PAST TEN YEARS, *85* SAFETY STANDARDS HAVE BEEN PUBLISHED

⇨ *8-9* SAFETY STANDARDS CAN BE COMPLETED *IN ANY YEAR*[3] ⇦

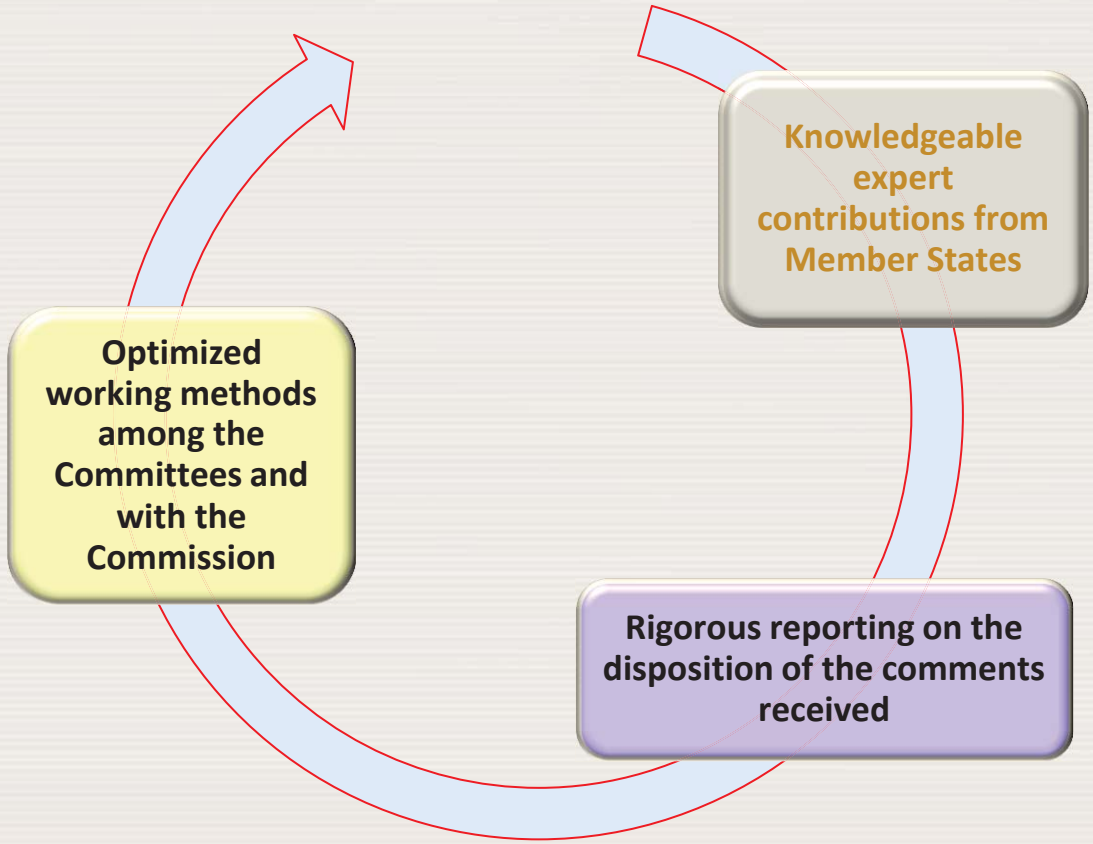
There is typically a ten year cycle for the revision of standards: it is important to keep this factor in mind when deciding on a manageable number of Safety Guides.

SPESS sets out the conditions under which new Safety guides may be started or existing Safety Guides may be revised.

[3] Given the current resources in the IAEA Secretariat and Member States.

BASIC STRATEGIES IN ACHIEVING THE VISION

G. Clarity, rigour and efficient processes



Commission & Committees

Commission on Safety Standards

- Standing body of senior government officials holding national responsibilities for establishing standards and other regulatory documents relevant to nuclear, radiation, transport and waste safety

- Overview role with regard to the Agency's safety standards and provides advice to the Director General on the overall programme on regulatory aspects of safety

IAEA

Terms of Reference of the Commission on Safety Standards

The functions of the CSS are:

- **To provide guidance on the approach and strategy for establishing the Agency's SSs, particularly in order to ensure coherence and consistency between them;**
- **To resolve issues referred to it by the committees;**

Terms of Reference of the Commission on Safety Standards

The functions of the CSS are (Cont'd) :

- **To endorse the texts of the SF & SRs for the BoG approval and SGs to be issued under the authority of the DG; and**
- **To provide general advice and guidance on SSs issues, relevant regulatory issues and SSs and related programmes, including those for promoting the worldwide application of the standards.**

Safety Standards Committees

- **Standing bodies of senior experts, established by the DDG-NS**
- **They advise the DDG-NS on the overall programme for the development, review and revision of standards and the programme for their application**

Terms of Reference of the Safety Standards Committees

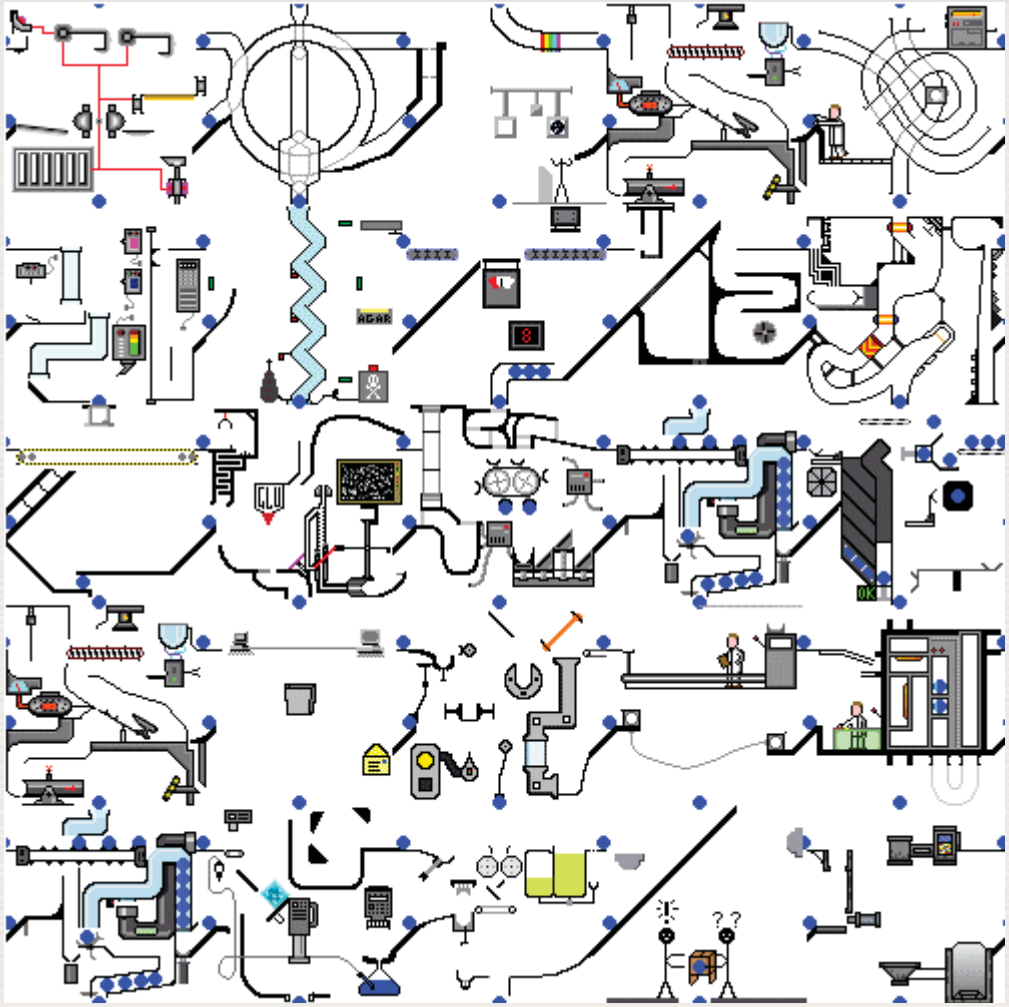
- To advise on the programme for the development of SSs, and to advise on priorities;
- To recommend activities and areas for improvement to enhance the overall programme and particularly to advise on the programme for the application of SSs
- To review reports on feedback from the application and use of SSs and to advise on enhancing their usefulness to achieve high levels of safety as well as on the timely review and the need for revision of published SSs
- To review proposals and to approve the DPPs prior to their submission to the CSS;

Terms of Reference of the Safety Standards Committees

- To review draft SSs, considering the value of each draft standard and the needs of users of the standards;
- To approve the text of draft SSs prior to their submission to Member States for comments and again prior to their submission to the CSS;
- To advise on relevant regulatory issues and activities for supporting the use and application of SSs and, upon request, on related issues;
- To review upon request draft publications in the Nuclear Security Series, in the Nuclear Energy Series and in other IAEA series where there is an interface with the SSs.

Process Flow for the Development of IAEA Safety Standards

Step-by-step process



BASIC STRATEGIES IN ACHIEVING THE VISION

H. INVOLVEMENT OF STAKEHOLDERS

Participation by the different stakeholders (for example, users, regulators and co-sponsors) during the drafting and review phase is a long established practice of the IAEA.

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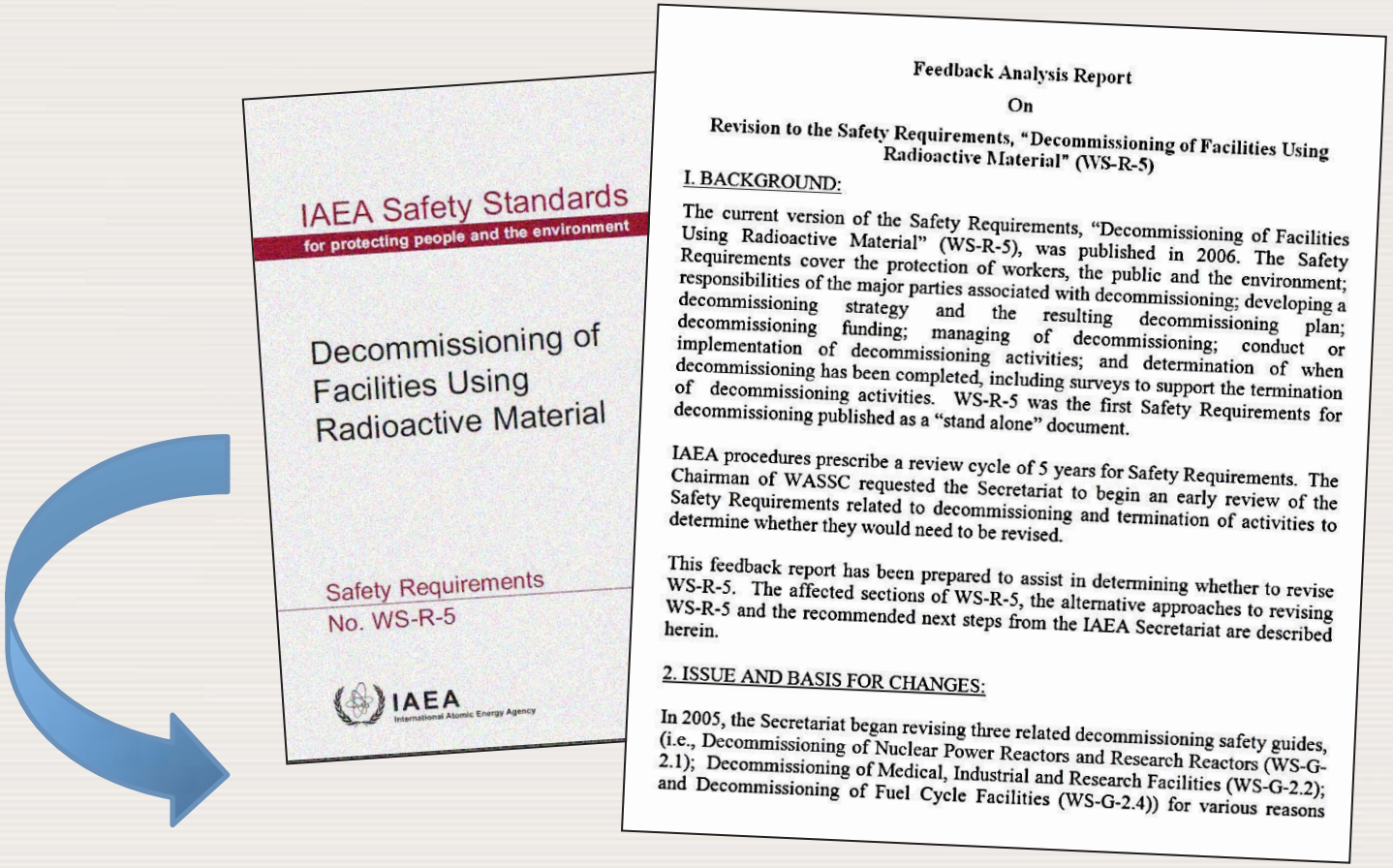
BASIC STRATEGIES IN ACHIEVING THE VISION

I. EFFECTIVE FEEDBACK

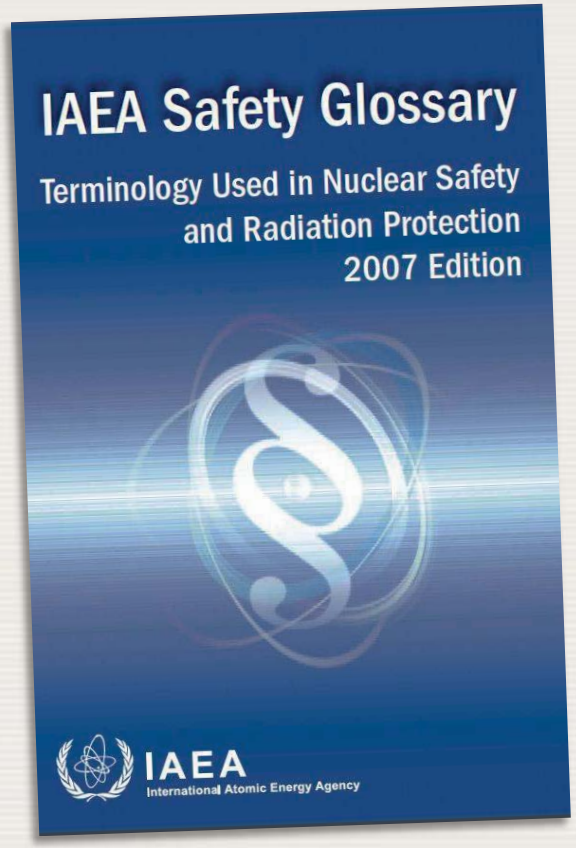


Feedback is one of the main inputs for the revision of the safety standards.

IAEA

BASIC STRATEGIES IN ACHIEVING THE VISION

J. HARMONIZED TERMINOLOGY



Drafters of safety and security related IAEA publications — particularly safety standards — should use terms as recommended by the IAEA Safety Glossary.

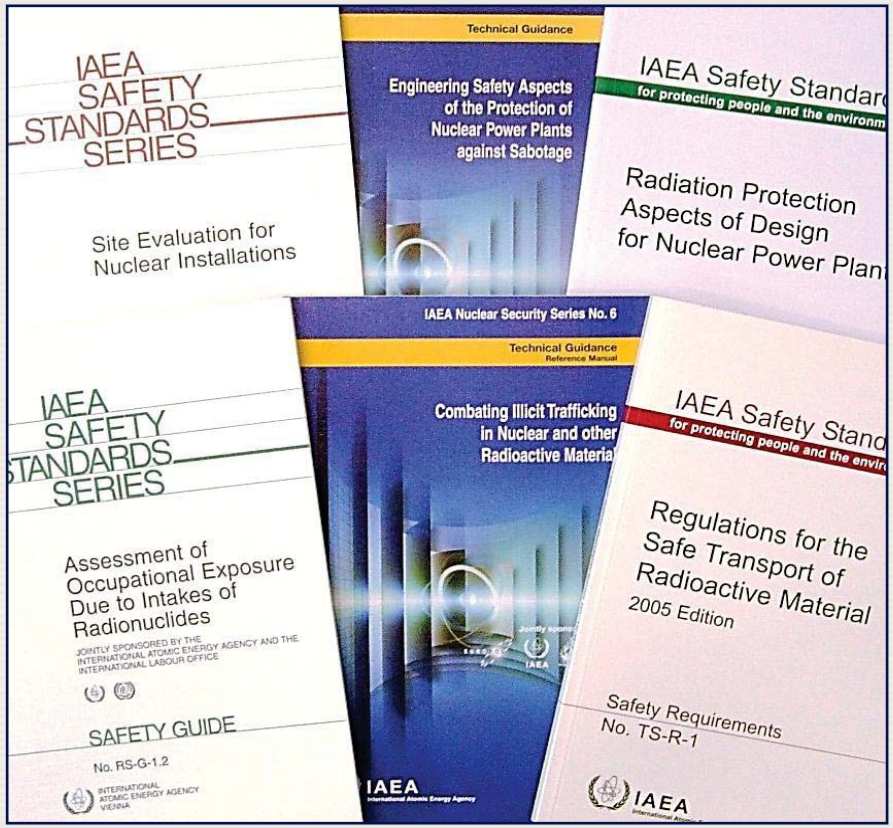
Unless otherwise justified and accepted through the review process, there should be no individual glossary in individual publications.

If a need to add or revise a definition of the IAEA Safety Glossary is identified through the development or revision of a safety standard, the proposal will be submitted to the review process and to the meeting of the four Chairs and if agreed, the Safety Glossary will be updated accordingly.

BASIC STRATEGIES IN ACHIEVING THE VISION

K. PROMOTION OF THE IAEA SAFETY STANDARDS

Any IAEA officer or committee member involved in the planning, development, review, revision, approval and establishment process for the IAEA safety standards should actively promote their use and application worldwide and the dissemination of feedback from this use.



BASIC STRATEGIES IN ACHIEVING THE VISION

L. SYNERGY AND INTERFACE BETWEEN SAFETY AND SECURITY

1. Nuclear security and safety are equally important and the process for review/approval should reflect this;

2. Safety document preparation profiles (DPPs) and nuclear security DPPs should be reviewed to identify/define interfaces, if any;

3. Draft safety publications and draft nuclear security publications that have an identified interface should be developed in consultation;

4. After implementation of points 2 and 3, draft safety publications and draft nuclear security publications should be reviewed and approved to ensure the coordination has been effective and that they are in accordance with the Safety Fundamentals and the Nuclear Security Fundamentals.

- As an intermediate committee structure:

IAEA Response to the TEPCO's Fukushima Daichi Accident

Ministerial Conference June 2011

The IAEA Ministerial Conference

- Director General made five proposals:
  - to strengthen IAEA **Safety Standards**;
  - to systematically review the **safety of all nuclear power plants**, including by expanding the IAEA's programme of expert peer reviews;
  - to enhance the effectiveness of **national nuclear regulatory bodies** and ensure their independence;
  - to strengthen the global **emergency preparedness and response system**; and,
  - **to expand the Agency's** role in receiving and disseminating information.

At the conference a Ministerial Declaration was adopted which inter alia:

- **Requested the IAEA Director General to prepare a Report on the June 2011 IAEA Ministerial Conference on Nuclear Safety and a draft Action Plan, and to promote coordination and cooperation, as appropriate, with other relevant international organizations to follow up on the outcomes of the Conference, as well as facilitate consultations among Member States on the draft Action Plan";**

- **Requested the IAEA Director General to present the Report and the draft Action Plan covering all the relevant aspects relating to safety, to the IAEA Board of Governors and the General Conference at their forthcoming meetings in 2011";**

- **Called upon the IAEA Board of Governors and the General Conference to reflect the outcome of the Ministerial Conference in their decisions and to support the effective, prompt and adequately resourced implementation of the Action Plan".**

IAEA Response to the TEPCO's Fukushima Daichi Accident

Nuclear Safety Action Plan

Action Plan on Nuclear Safety

IAEA peer reviews

Strengthen IAEA peer reviews in order to maximize the benefits to Member States

- The IAEA Secretariat to strengthen existing IAEA peer reviews by incorporating lessons learned and by ensuring that these reviews appropriately address regulatory effectiveness, operational safety, design safety, and emergency preparedness and response; Member States to provide experts for peer review missions.

Note: The reference for the peer reviews are the IAEA Safety Standards

- The IAEA Secretariat, in order to enhance transparency, to provide summary information on where and when IAEA peer reviews have taken place, and to make publicly available in a timely manner the results of such reviews with the consent of the State concerned.
- **Member States to be strongly encouraged to voluntarily host IAEA peer reviews**, including follow-up reviews, on a regular basis; the IAEA Secretariat to respond in a timely manner to requests for such reviews.
- The IAEA Secretariat to assess, and enhance as necessary, the effectiveness of the IAEA peer reviews.

Action Plan on Nuclear Safety

National regulatory bodies

Strengthen the effectiveness of national regulatory bodies

- **Member States to conduct a prompt national review and thereafter regular reviews of their regulatory bodies, including an assessment of their effective independence, adequacy of human and financial resources and the need for appropriate technical and scientific support, to fulfil their responsibilities.**
- The IAEA Secretariat to enhance the Integrated Regulatory Review Service (IRRS) for peer review of regulatory effectiveness through a more comprehensive assessment of national regulations against IAEA Safety Standards.
- **Each Member State with nuclear power plants to voluntarily host, on a regular basis, an IAEA IRRS mission to assess its national regulatory framework.** In addition, a follow-up mission to be conducted within three years of the main IRRS mission.

IAEA

Action Plan on Nuclear Safety

Operating organizations

Strengthen the effectiveness of operating organizations with respect to nuclear safety

- **Member States to ensure improvement, as necessary, of management systems, safety culture, human resources management, and scientific and technical capacity in operating organizations**; the IAEA Secretariat to provide assistance to Member States upon request.
- **Each Member State with nuclear power plants to voluntarily host at least one IAEA Operational Safety Review Team (OSART) mission during the coming three years, with the initial focus on older nuclear power plants**. Thereafter, OSART missions to be voluntarily hosted on a regular basis. OSART references are the IAEA Safety Standards. The IAEA Secretariat to strengthen cooperation with WANO by amending their Memorandum of Understanding to enhance information exchange on operating experience and on other relevant safety and engineering areas and, in consultation with other relevant stakeholders, to explore mechanisms to enhance communication and interaction among operating organizations.

Action Plan on Nuclear Safety

IAEA Safety Standards

Review and strengthen IAEA Safety Standards and improve their implementation

•The Commission on Safety Standards and the IAEA Secretariat to review, and revise as necessary using the existing process in a more efficient manner, the relevant IAEA Safety Standards in a prioritised sequence.

•**Member States to utilize as broadly and effectively as possible the IAEA Safety Standards in an open, timely and transparent manner**. The IAEA Secretariat to continue providing support and assistance in the implementation of IAEA Safety Standards.

Action Plan on Nuclear Safety

Member States planning to embark on a nuclear power programme

Facilitate the development of the infrastructure necessary for Member States embarking on a nuclear power programme

- **Member States to create an appropriate nuclear infrastructure based on IAEA Safety Standards** and other relevant guidance, and the IAEA Secretariat to provide assistance as may be requested.

- **Member States to voluntarily host Integrated Nuclear Infrastructure Reviews (INIR) and relevant peer review missions**, including site and design safety reviews, prior to commissioning the first nuclear power plant.

IAEA Response to the TEPCO's Fukushima Daichi Accident

Convention on Nuclear Safety

General Information on the CNS 2nd Extraordinary Meeting

Objectives of the 2nd EM

1. To review and discuss **lessons learned from the accident at TEPCO's Fukushima Daiichi nuclear power plant**
2. To review the **effectiveness of the provisions of the CNS**

Structure of the 2nd EM

- No Country Group but **Working Sessions** to discuss the **6 topical areas** to address the lessons learned from Fukushima, namely:

•Topic 1 – External Events
•Topic 2 – Design Issues
•Topic 3 – Severe Accident Management & Recovery
•Topic 4 – National Organizations
•Topic 5 – Emergency Preparedness & Response, and Post-Accident Management
•Topic 6 – International Cooperation

- **Plenary Sessions** to discuss the **effectiveness of the CNS**

Issues to be considered in the preparation of National Reports for the 6th Review Meeting (1/3)

- For existing NPPs:
  - the **results of reassessments of external events**, of periodic safety assessments and of any peer reviews, and any follow-up actions taken or planned, including upgrading measures
  - any **actions** taken or planned **to cope** with natural hazards **more severe** than those **considered in the design basis.**
- For new NPPs:
  - **improved safety features and additional improvements**, if any, **to address external hazards and to prevent accidents** and, should an accident occur, to mitigate its effects and avoid off-site contamination.

Issues to be considered in the preparation of National Reports for the 6th Review Meeting (2/3)

- **Upgrading of accident management measures for extreme natural events**, including for example:
  - measures to ensure core cooling and spent fuel pool cooling, the provision of alternate water sources for the reactor and for the spent fuel pool, the availability of the electrical power supply, measures to ensure containment integrity, and filtration strategies and hydrogen management for the containment;
  - the development of probabilistic safety assessments to identify additional accident management measures should be considered as a possible future activity.

- **Measures taken or planned to ensure the effective independence of the regulatory body from undue influence**, including, where appropriate, information on the hosting of IRRS missions.

Issues to be considered in the preparation of National Reports for the 6th Review Meeting (3/3)

- **Enhancements of emergency preparedness and response measures**, including for example for multi-unit sites, approaches and methods of source term estimation and initiatives in the field of remediation.
  - The enhancements should include defining the additional responsibilities up to appropriate levels of the national government and the development of procedures and joint actions of various agencies and improvements in international cooperation.
- **Information on how IAEA safety standards are taken into account.**
- **Information on activities undertaken to enhance openness and transparency for all stakeholders**.
- **Safety culture and human and organizational factors** were identified as cross-cutting issues, to be given particular attention, as they affect the consideration of external events, design, severe accident management, including operator training, the good functioning of national organizations and emergency preparedness and response.

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IAEA Response to the TEPCO's Fukushima Daichi Accident

Review of the IAEA Safety Standards

Review of the IAEA Safety Standards

Background

- Director General introductory statement to the IAEA Ministerial Conference on Nuclear Safety on 20 June 2011
- DG letter dated 7 July 2011 to the CSS Chair: “I would be very grateful if the Commission could review the standards, and report back to me within the next 12 months, with recommendations for strengthening the standards, where gaps would be identified, and for further promoting their universal application.”

Review of the IAEA Safety Standards

IAEA Action Plan on Nuclear Safety (GOV/2011/59-GC(55)/14)

Review and strengthen IAEA Safety Standards and improve their implementation

- The Commission on Safety Standards and the IAEA Secretariat to review, and revise as necessary using the existing process in a more efficient manner, the relevant IAEA Safety Standards in a prioritised sequence. [A footnote clarifies that this review could include, inter alia, regulatory structure, emergency preparedness and response, nuclear safety and engineering (site selection and evaluation, assessment of extreme natural hazards including their combined effects, management of severe accidents, station blackout, loss of heat sink, accumulation of explosive gases, nuclear fuel behaviour and ways to ensure the safety of spent fuel storage).]

Review of the IAEA Safety Standards

Scope of the gap review

- It was not intended to restrict the gap review to an a priori pre-established list of safety standards.

- It was preferred to carry out a systematic review of the topical issues that are highlighted by the accident, which then leads to the list of those standards addressing these issues, and to a list of gaps with recommendations on how to fill the gaps by revising existing standards or by proposing new standards.

Review of the IAEA Safety Standards

Prioritization

- Given the time it will take for the Fukushima Daiichi accident to be analysed, the large number of safety standards to be reviewed and the interrelationships among them, it the gap review coverred as a first priority the set of Safety Requirements. For the set of Safety Guides, an in depth analysis of the accident would be necessary, but the first gap analysis can also identify guides to be reviewed as priority.

- Within the Safety Requirements, a first priority was given to those requirements applicable for nuclear power plants and to the storage of spent fuel, i.e. the set of General Safety Requirements and the Specific Safety Requirements relating to site evaluation for nuclear installations, and design, commissioning and operation of NPPs
- In parallel, work at WASSC and TRANSSC on other Requirements

Review of the IAEA Safety Standards

Topical approach

- The gap review started by identifying in a systematic manner the lessons learned from the accident, using available sources (Reports from the Gov. of Japan, Fact finding mission, INSAG letter, etc …).
- Each lesson was then allocated to a topical area which helps making the link to where the topics are addressed in the set of requirements. The Secretariat established at the end of 2010 such a table on the basis of established and potential overarching requirements for the whole set of Safety Requirements.
- 77 topical safety areas have been selected a priori to classify the lessons learned but the review complemented this list by adding other topical areas.

Review of the IAEA Safety Standards

Review

- Each individual lesson to be learned either corresponded to an identified topical area in the table or lead to one more area being added, indicating that this lesson to be learned is not yet covered in broad terms in the Safety Requirements.
- When the lesson corresponds to a topical area in the table, the next step was to identify a potential requirement that would be expected to address the issue in the Safety Requirements. The following step was to check whether or not this potential requirement is already included in the set of published or draft Safety Requirements. This then allowed the establishment in a systematic manner of a full gap analysis. At that stage, it is also possible to identify need for further recommendations in the safety guides

Review of the IAEA Safety Standards

Process and timeline for the gap review (Cont'd)

- The results submitted to the CSS for its meeting in March 2012 and a second progress report was presented In October 2012
- Feedback from national evaluations, EU stress tests as well as from International Expert Meetings and Meeting of the convention on Nuclear Safety also being considered

Review of the IAEA Safety Standards

Results of the Gap Analysis so far

- 106 lessons learned analysed
- No major gaps identified on the 450 overarching requirements*
- First proposal to be reviewed by the Committees, the Member States and the CSS consists in the addition of 31 associated requirements and strengthening of 20 existing associated requirements
- Most of the proposed addition to the requirements are actually already covered by the Safety Guides providing recommendations on how to implement the safety requirements
- Most significant additions:
  - Consideration of additional provisions to cope with situations involving the loss, over an extended period of time, of off-site power or the ultimate heat sink;
  - Consideration of properly identified potential external hazards, including those which may affect the availability of the regional infrastructure due to extreme external events;
  - The need to ensure that information on the essential safety parameters remains available in severe accident conditions.

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* each overarching requirement addresses a main topical safety area and is complemented by a set of associated requirements (total ~4000)

Review of the IAEA Safety Standards

Next steps

- New process: Concomittant revision, through addenda, of the relevant part of the Safety Requirements GSR Part 1, NS-R-3, SSR-2/1, SSR-2/2 and GSR Part 4
- Contribution to the revision of GS-R-2 and GS-R-3
- Detailed review of the proposed addenda by the Committees in 2013
- Member States consultation in 2013
- Review and revision of the Safety Guides in parallel