

2.6. NSKM on National and Organizational Level

Zoltan Pasztory
IAEA IEX Hungary

Focus: National level

- Nuclear safety a national topic
 - Governmental role
 - Leadership
 - Link to national sustainable development plans
 - Link to national energy plans
 - Nuclear safety involves many stakeholders
 - National HR planning
 - Workforce migration
 - University education
 - Existing nuclear safety networks (national, regional, global)
 - Knowledge exchange with neighbouring disciplines and society

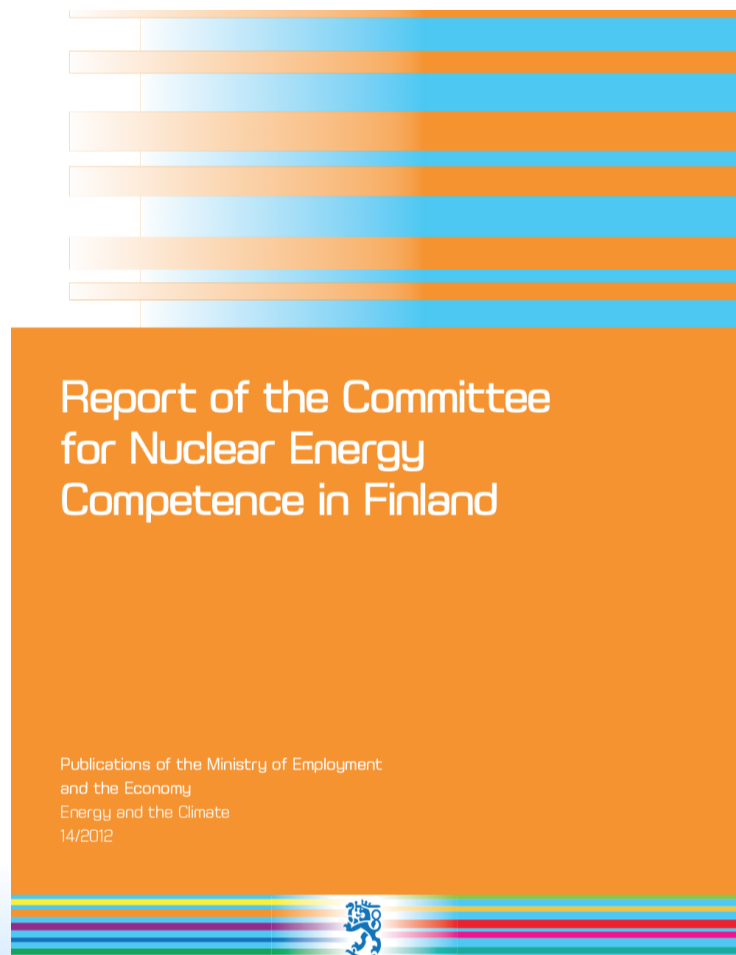


Focus: National and organizational

- Some individual organizations have individual NSKM programmes
 - They are not connected on national level
 - Regulators – operators – academia – R&D organizations – designers: separate KM programmes
 - Lack of efficiency, effectiveness, friction losses
 - Risk of segmentation
- Connect individual knowledge management programmes to increase the national level effectiveness*!

* Certainly, when you are building these connections, you have to pay attention for IP rights!

National HR planning: Finland



Preface	5
1 Introduction	11
1.1 General Situation in the Nuclear Energy Sector	11
1.2 Objectives of the committee's Work and Method of Implementation.....	15
1.3 Presentation of the Survey and its Objectives.....	16
1.4 Presentation of the Parts of the Survey.....	17
2 Nuclear Energy Sector Personnel Resources in 2010	19
2.1 Employment Structure and Figures in the Energy Sector from 2005 to 2025.....	19
2.2 Current Personnel within the Nuclear Energy Sector	20
2.3 The Current Nuclear Energy Sector Personnel by Years of Experience and Age	27
2.4 Current Personnel of the Nuclear Energy Sector by Competence Area.....	28
2.5 Future Personnel Needs within the Nuclear Energy Sector.....	32
2.5.1 Overall Need for Personnel within the Nuclear Energy Sector	32
2.5.2 Need for Personnel by Field and Level of Basic Higher Education.....	33
2.5.3 Personnel Needs of Power Companies, Authorities, Research Institutions and Universities.....	37
2.6 Summary and Conclusions.....	40
3 Education	43
3.1 Structure of the Finnish Education System.....	43
3.1.1 Education Policy Guidelines until 2016.....	46
3.2 Qualification Requirements Concerning Personnel.....	47
3.3 Basic Higher Education Degrees in Universities and Polytechnics.....	49

National nuclear competence coordination: Germany

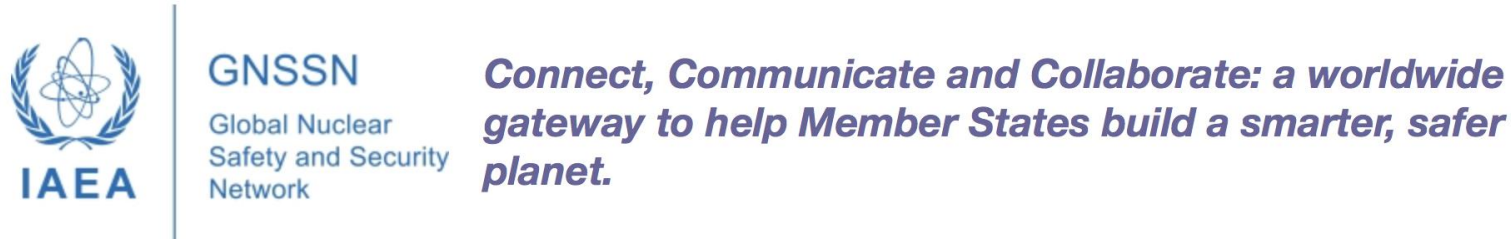
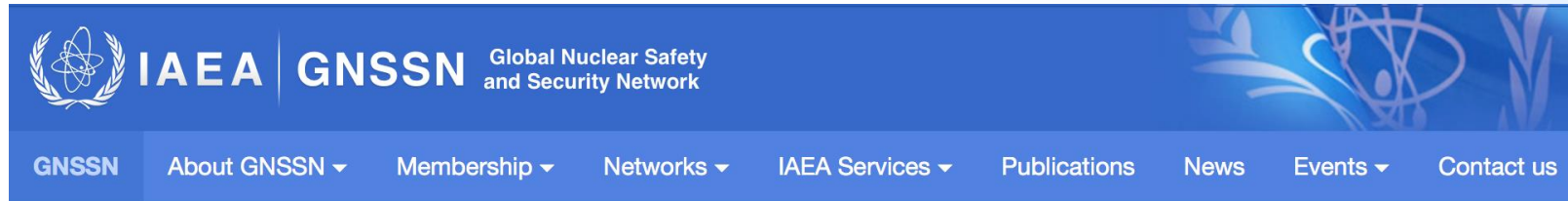
- Standing coordination mechanism
 - founded in 2000
 - all stakeholders, senior level
 - "soft coordination"



Topic

IAEA ACTIVITIES AND PUBLICATIONS

NSKM and GNSSN



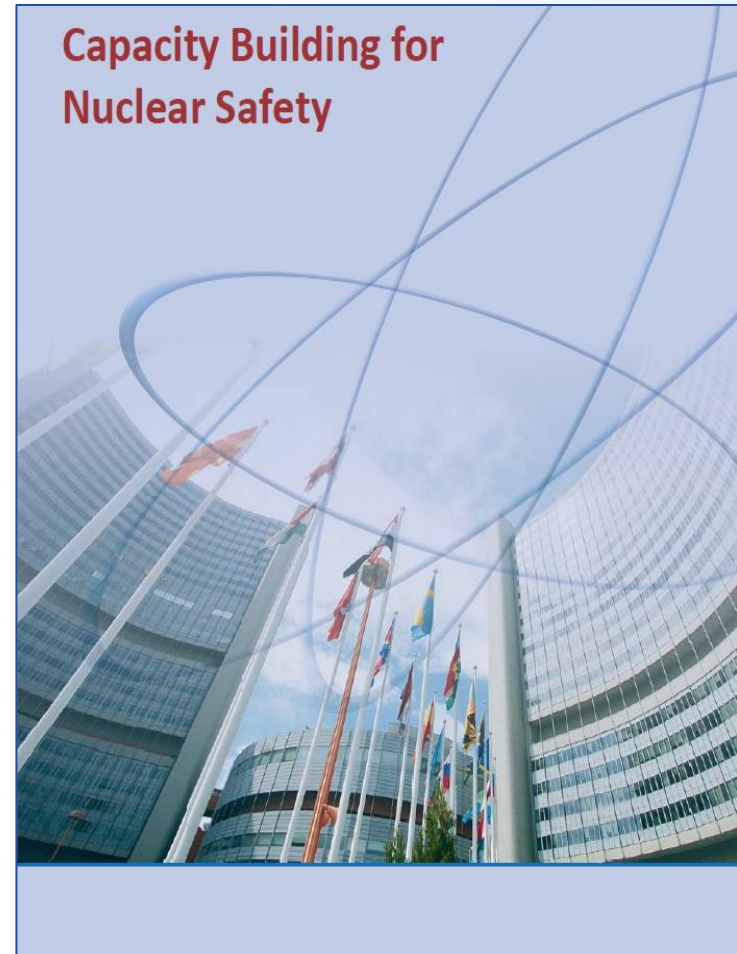
- Global Nuclear Safety and Security Network
 - NSKM is integral part of [GNSSN](#) Mission
 - (Mission 1 of 3)

NSKM and IEMs

- Lessons learned from Fukushima
 - IAEA Report on Strengthening Nuclear Regulatory Effectiveness in Light of Accident at Fukushima Daiichi Nuclear Power Plant
 - Recommendations on KM for regulators
 - IAEA Report on Human and Organizational Factors in Nuclear Safety in Light of Accident at Fukushima Daiichi Nuclear Power Plant
 - Recommendations on human resources and many KM issues
 - Integrated (systemic) approach to nuclear safety benefits from NSKM
 - IAEA Report on Capacity Building for Nuclear Safety
 - Recommends using NSKM explicitly

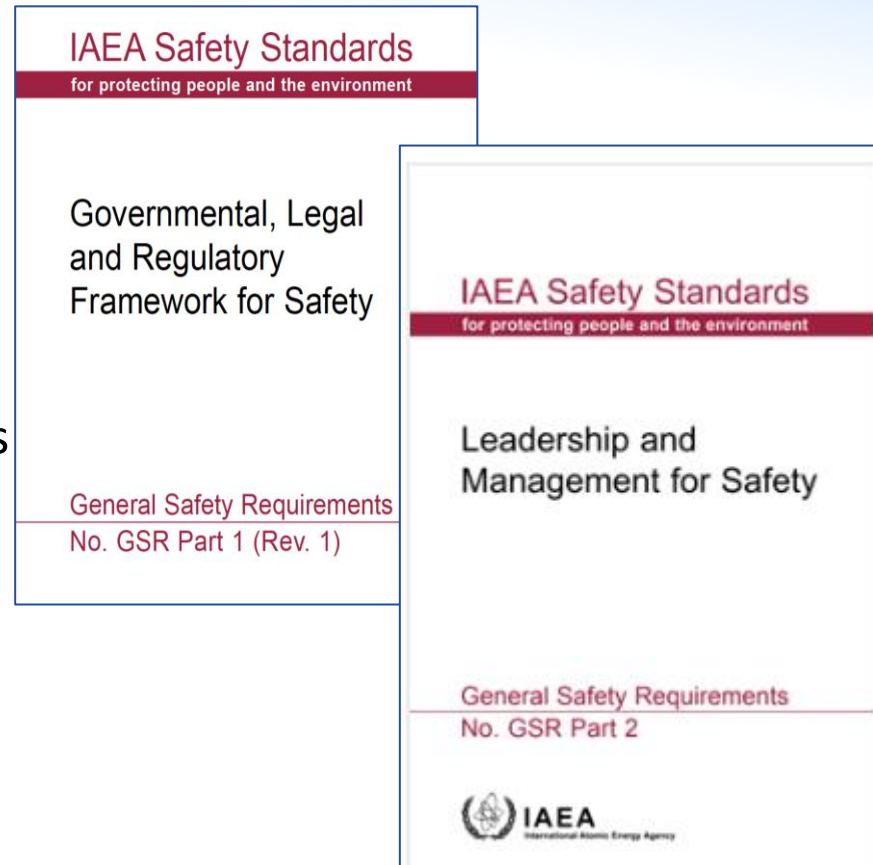
IAEA Publications

- Capacity Building for Nuclear Safety (2015)
 - IEM Series
 - i.e.: captures lessons learned from Fukushima
 - Source
 - International Conference on Human Resource Development for Nuclear Power Programmes: Building and Sustaining Capacity (2014)
 - Nature
 - Higher level conclusions and recommendations



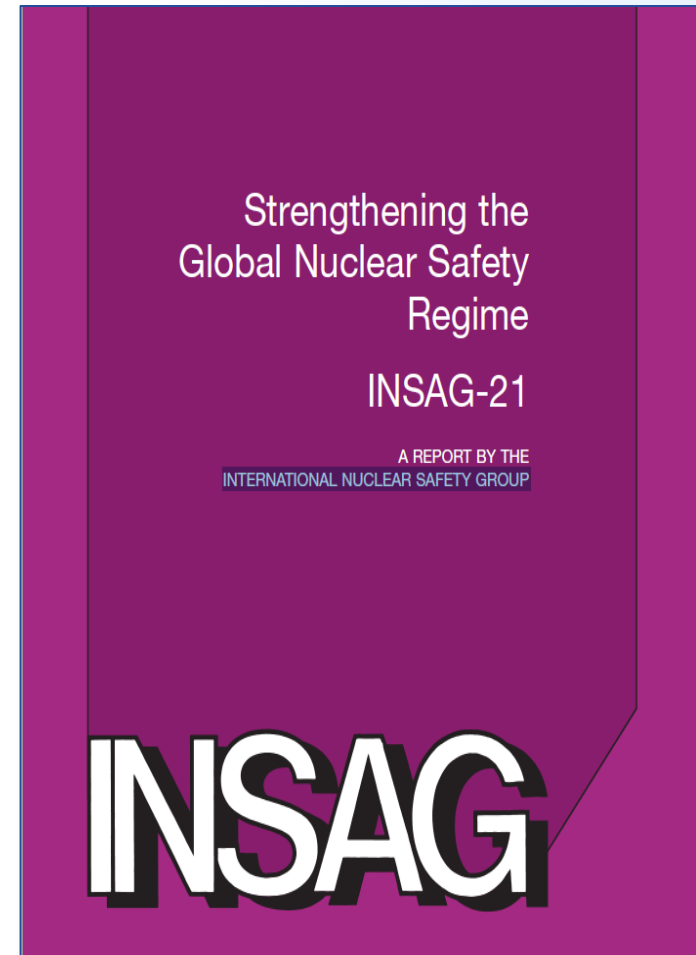
NSKM and Safety Standards

- Safety Standards
 - [GSR Part 1](#)
 - NSKM as part of national endeavor
 - [GSR Part 2](#) + Guides
 - NSKM as part of an organizations management system
 - See also the list of superseded IAEA Safety Standards presented yesterday (2.4.)



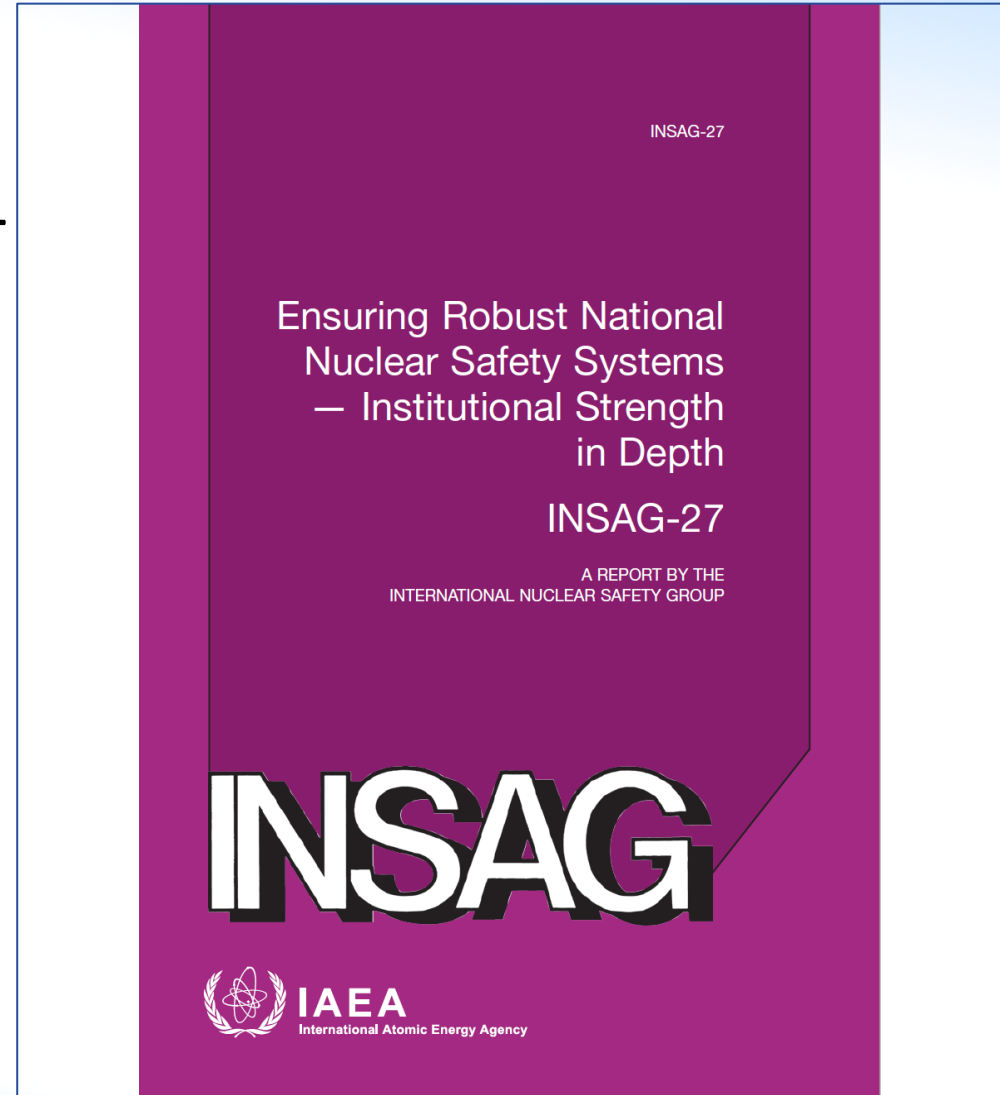
INSAG 21 (2006)

- Elements of the Global Nuclear Safety Regime
 - Calls for "enhanced exchange of operating experience for improving operating and regulatory practices"



INSAG 27 (2017)

- Ensuring Robust National Nuclear Safety Systems — Institutional Strength in Depth
 - Connects to knowledge management and capacity building



INSAG 27 (2017)

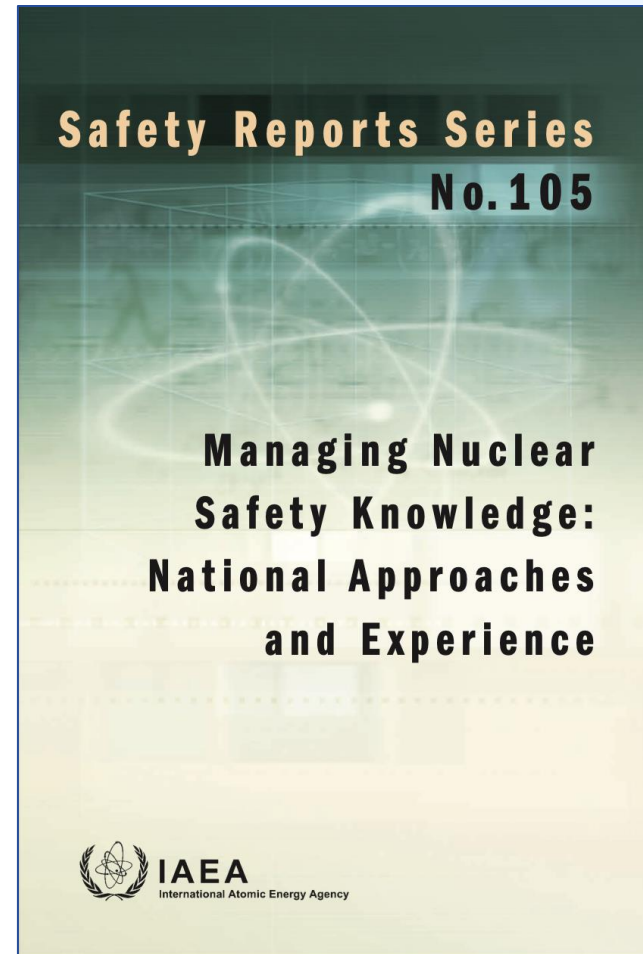
- Strength in depth (SiD) applied to the nuclear safety system
 - Strong nuclear industry
 - Strong nuclear regulator
 - Strong set of stakeholders
- "'Strong' in this context refers to an inner strength to encourage and welcome challenge, to challenge others, to question and consider others' options and advice, and to possess the competence and capacity to fulfil functions and duties."

INSAG 27 (2017)

- "Crucially, the effectiveness of the application of these principles to both technical and operational safety and to the overall system depends on the people involved, their competence, their safety culture, and how they are organized and led. "

IAEA Publications

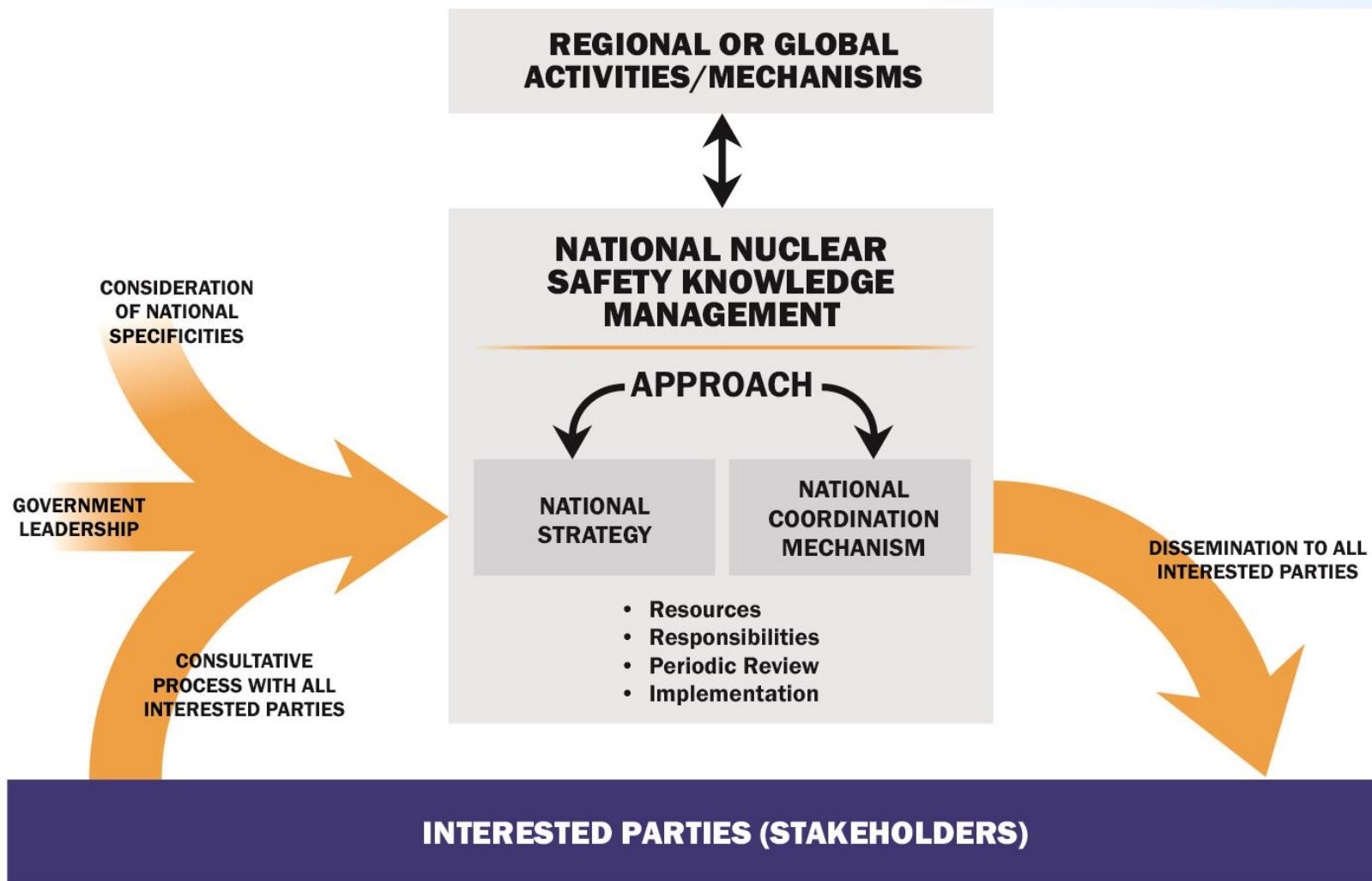
- [SRS-105](#) Managing Nuclear Safety Knowledge
 - Audience
 - Broad. All who deal with nuclear safety knowledge
 - Level
 - National
 - Specific challenges and benefits exist
 - Content
 - Conceptual basis of NSKM
 - Recommends national level strategy or national level coordination mechanism
 - Experience gained in Member States
 - Appr. 40 short summaries of activities and experience based on two IAEA conferences and one Technical Meeting (2017)



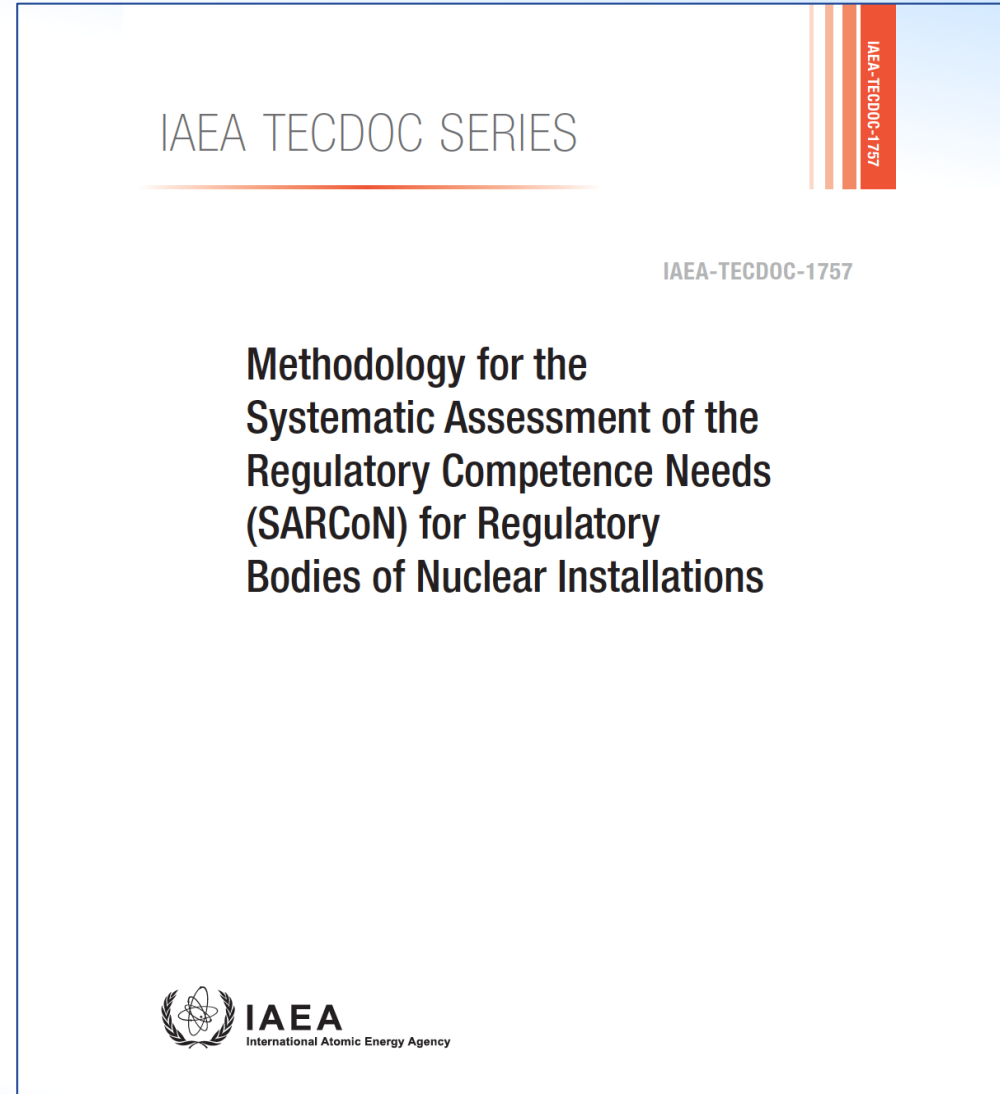
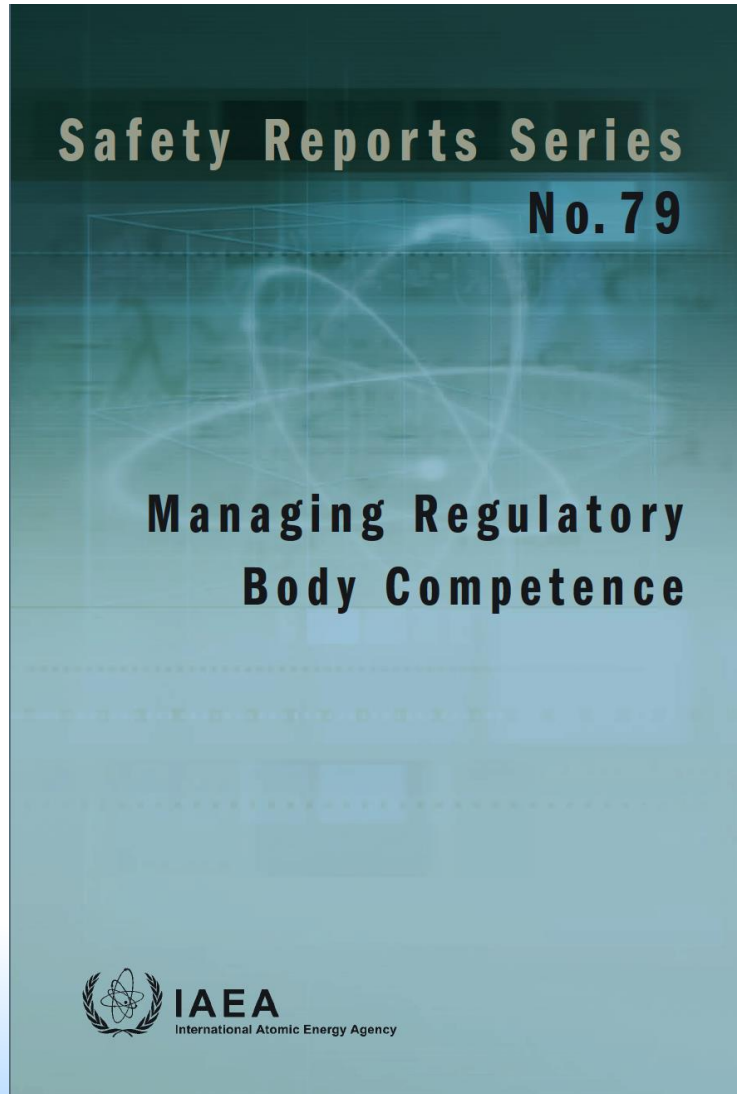
SRS-105 Managing Nuclear Safety Knowledge

- Excerpt: national level considerations
 - Leadership role of governments to foster national approach
 - Need to involve many diverse stakeholders
 - Need to manage knowledge across organizational boundaries: knowledge interfaces
 - National human resource demand and supply planning
 - Coping with changing societal, political and technical environment to achieve long-term resilience
 - Develop a national memory
- Action: national level approach for nuclear safety capacity building and knowledge management
 - national strategy
 - national coordination mechanism

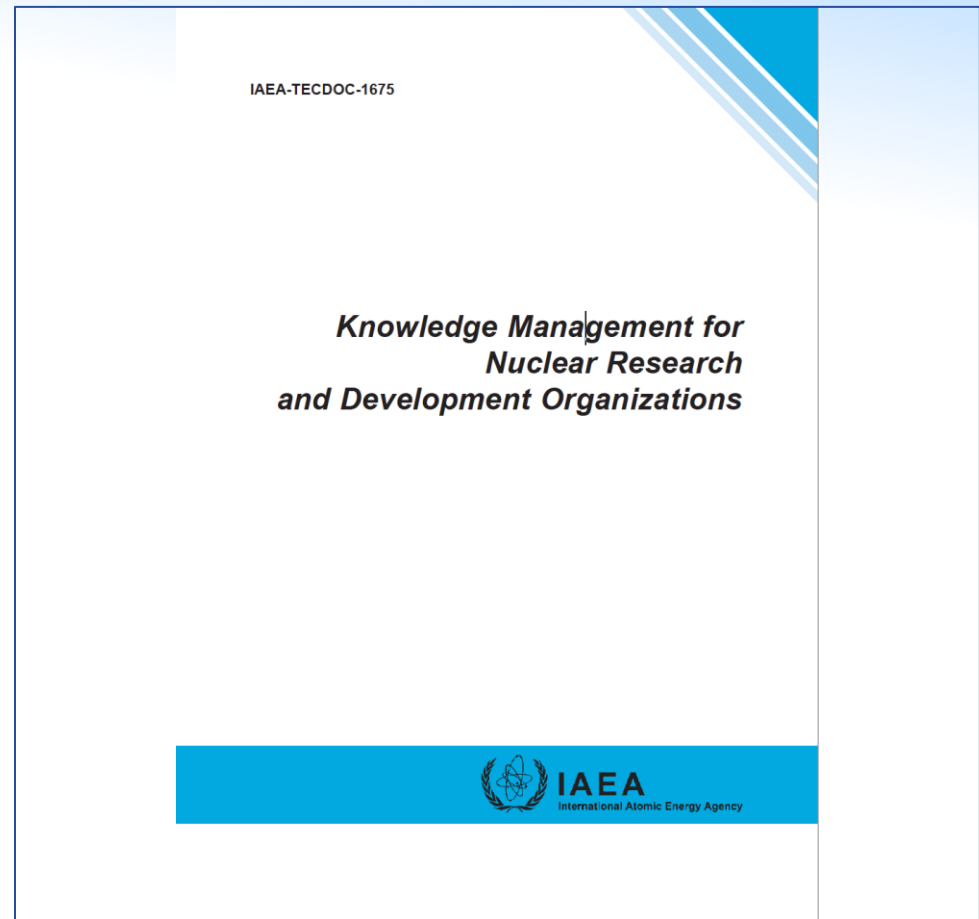
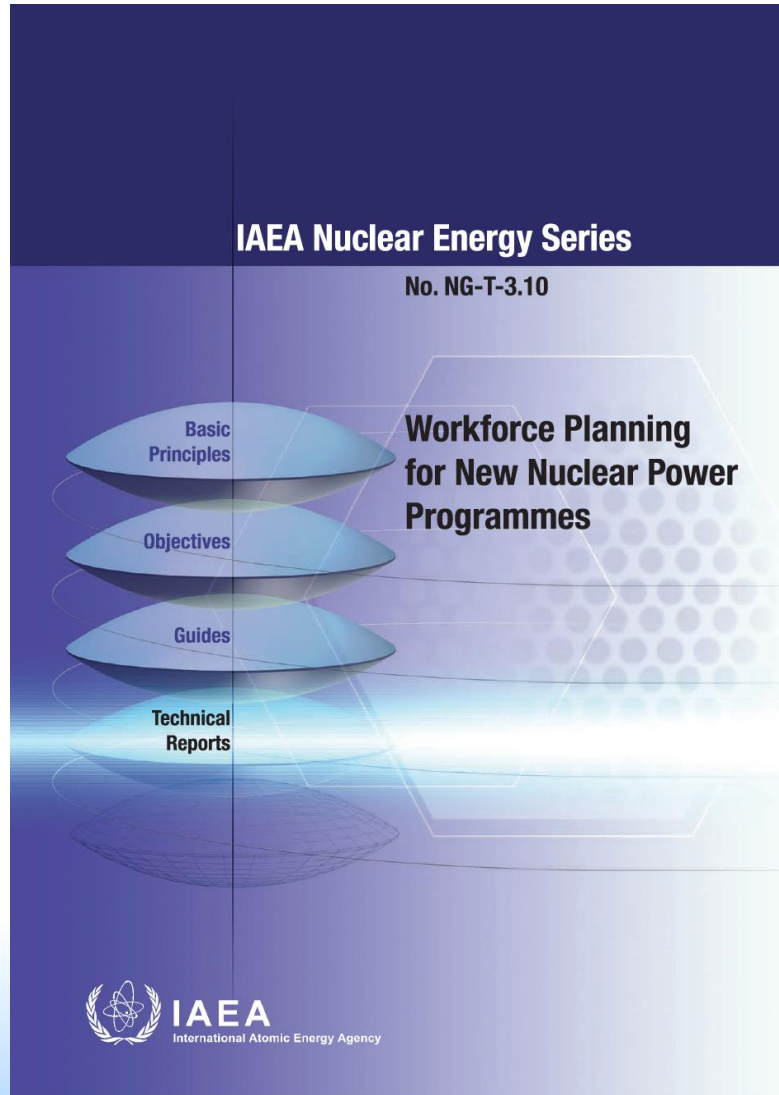
SRS-105 Managing Nuclear Safety Knowledge



IAEA publications for regulatory bodies

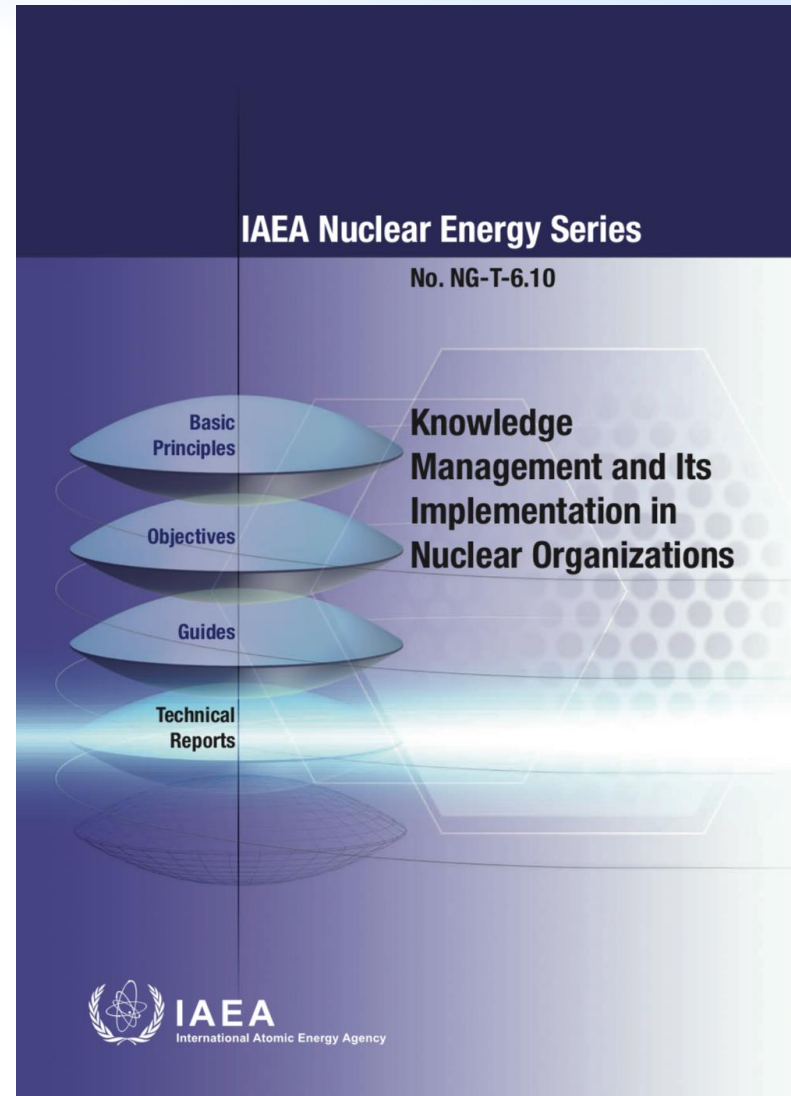
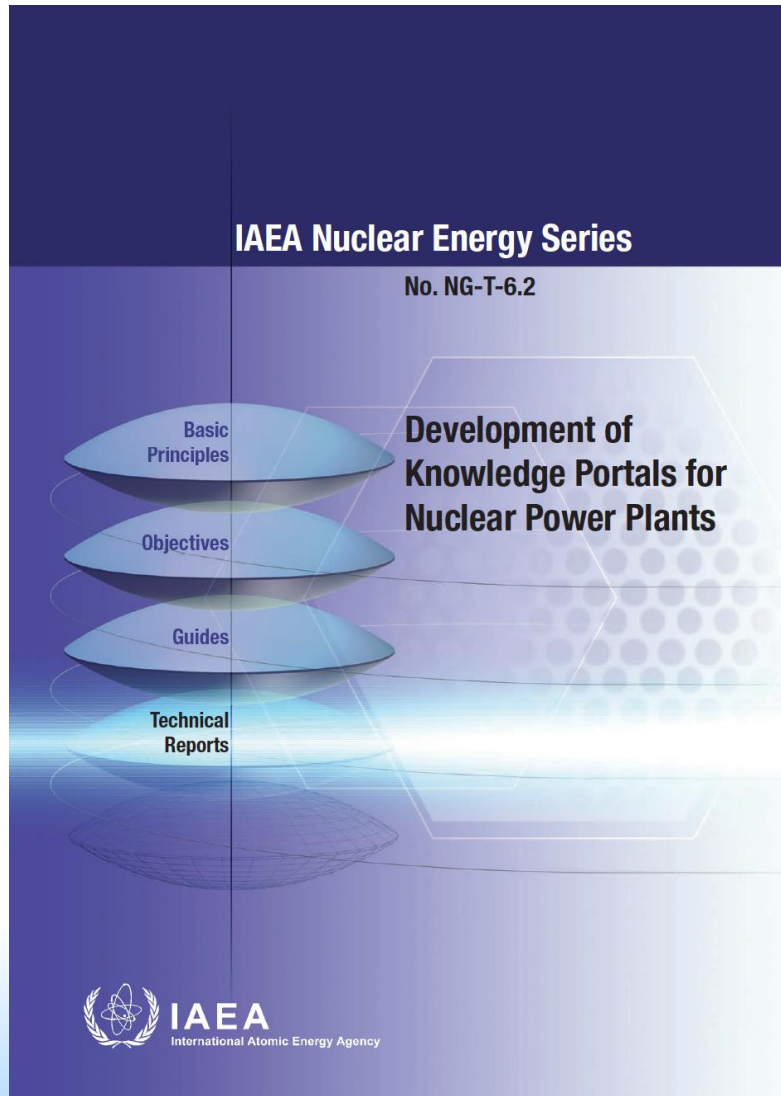


IAEA Publications (Nuclear Energy)



KM Glossary in Annex

IAEA Publications (Nuclear Energy)



Topic

NSKM FOR REGULATORY BODIES

NSKM for Regulatory Bodies

- Approach
 1. Knowledge management strategy
 2. Knowledge management plan
 1. Avoiding knowledge loss (risk assessment)
 2. Ensuring knowledge transfer (routine activity)
 3. Build new knowledge and capacity (if required)
 4. Other
 3. Implement knowledge management activities
 4. Effectiveness evaluation

KM Strategy at RB

- KM Strategy can include
 - Objectives
 - Roles and responsibilities
 - CKO, leaders, all staff
 - Resources
 - Timeline
 - Internal communication
 - Interfaces with
 - Organizational integrated management system
 - organizational strategy and goals
 - national context

KM Strategy at Regulatory Body

- Cover all areas of RB mandate
 - review and assessment
 - authorization
 - inspection
 - enforcement
 - development of regulations and guides

Topic

RECOMMENDED KNOWLEDGE MANAGEMENT TASKS/ACTIVITIES

Activities

- Assure Transfer of knowledge
 - Use exit interviews and debriefings
 - Plan for overlapping incoming and leaving staff
 - Use mentoring and shadowing
 - Use e-learning applications
- Sharing knowledge
 - Build and support communities of practice
 - define group
 - kick-off meeting
 - support with IT platform or coffee
 - Build an inventory of lessons learned
 - build (simple)
 - promote use (difficult)

Activities

- Human resource planning
 - Use human resource demand and supply forecasting
 - Workforce planning (organization level)
 - National development plans (national level)
- Knowledge mapping
 - Build knowledge maps
 - simple tools available cost-free
 - Perform knowledge gap analysis
 - Define corrective actions systematically

Activities

- Governance
 - Define leadership
 - Governmental leadership (national level)
 - Appoint a CKO (organizational level)
 - Establish a formal strategy
 - Can be part of another strategy, e.g. as chapter
 - Establish an implementation Plan
 - including resources
 - Connect NKM to integrated management system
 - Include performance indicators

Activities

- Pursure a national level approach
 - Can be
 - a formal strategy or
 - a coordination mechanism
 - Governmental leadership
 - Involve all stakeholders
 - IAEA support available
 - SSR "Managing Nuclear Safety Knowledge"
 - "Assessment of Capacity Building"
 - Technical Cooperation or direct discussion

Activities

- Technologies
 - Use community software and collaborative workspaces
 - IAEA support available!
 - Global Nuclear Safety and Security Network
 - Use internal technical wikis
 - Use AI to support (internal and external) the access to the right information quickly

Thank you for your attention!

Questions/Comments?