CHANGING ENVIRONMENTS
COPING WITH DIVERSITY AND GLOBALIZATION

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International Atomic Energy Agency

changing environments
coping with diversity & globalization

- Present status of issues
  - Globalization on nuclear industry
  - Cooperation between regulatory bodies
  - Industrial standards, technology transfer and licensing
  - Operational issues
  - IT and communication
- Priorities for future work
- Strengthening international cooperation / global safety regime
- Potential areas for IAEA activities
- Questions for discussion

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Globalization of the nuclear industry

from

- **Competition between manufactures from different origin**
- **Countries with different design / operating philosophies**
- **National cultures and regulatory practices and standards**

to

- **Consolidation in plant vendors and operators**
- **National to multinational companies**
- **NPP ownership and operating arrangements**
- **Multilateral R & D**

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Globalization of the nuclear industry

- Early joint efforts on processes / reactors
  - Urenco group, EPR
- Merging companies
  - Framatome / Siemens , AREVA, BNFL-W-ABB
- Industry consortium
  - NuStart (US utilities, EdF, W and GE)
  - INPRO
  - GEN IV international Forum
  - PMBR

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Globalization of the nuclear industry

- Electricity is an international commodity
  - cheap electricity at lower safety standards
- Industry cope with diverse and conflicting 'boundary' conditions:
  - technical, political, cultural and environmental
- Restructuring and transition:
  - effort to maintain and improve safety culture

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Cooperation between national regulatory bodies

- Safety regulation = national responsibility
- Several international groups for cooperation:
  - exchange information and best practices
  - improve regulatory effectiveness and processes in own countries
- Different basis
  - size of nuclear programme (INRA, NERS)
  - reactor type (WWER, PHWR)
  - region (Ibero-American Forum, WENRA)

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Cooperation between national regulatory bodies

- groups foster particular interests
- common directives with broader perspective: thematic or regional
- EU - safety initiatives of Commission
- NEA-OECD: CNRA
- IAEA
  - **Senior Regulators' Meeting - info exchange**
  - **Safety standards setting high level of safety**
  - **No global use - incompatibility national regulations**
  - **IRRT findings**

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Industrial standards, technology transfer and licensing

- No internationally recognized set of industrial (safety) standards - ISO TC85 and IEC
  - **slow development**
  - **some agreement ISO/IEC with IAEA**
  - **no active promotion from industry**
- Differences in standards between supplier and recipient country can affect:
  - **import license**
  - **technology transfer**

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Industrial standards, technology transfer and licensing

Technology transfer is limited or impeded by

- position of recipient
- confidentiality and commercial value
- language
- national policies (e.g. NPT)
- changing safety requirements

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Industrial standards, technology transfer and licensing

Licensing issues may arise

- design not yet approved in country of origin
- old design not meeting new requirements
- missing original information
- importing designs from different countries
- features of mixed origin in one design

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Operational issues

- Large generating companies and management organizations
  - **better management and technical capabilities**
  - **merging diverse cultures**
- Challenges
  - **role of licensee versus management organization**
  - **outsourced work**
  - **responsibility**
  - **major decisions**

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Information technology and communication

- Advances in IT:
  - stronger interaction
  - greater public awareness and expectations
- Essential for public trust
  - dedicated public communication
  - greater transparency

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Priorities for future work

Integrating diverse standards, national approaches and regulatory practices

- embrace the internationally accepted IAEA safety standards
- stable and predictable nuclear regulatory regime
- develop and adopt industrial safety standards

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Priorities for future work

International design certification

- guarantees that design meets standards
- similarities with aircraft and rail approach
- Different schemes
  - **Mutual approval**
  - **Consortium** of regulatory bodies / TSOs
  - Common designs for a few **target countries**

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Priorities for future work

Technology transfer :

- Relates to more than hardware
- Rules
  - language
  - long-term commitment, including feedback of operational experience

Supplementary arrangement between regulators

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Priorities for future work

Accountability

- Ensure that safety of initial plant design is maintained
- Maintaining design integrity (INSAG-19)
- Limits or extent of accountability of supplier and recipient
- Feedback of experience; new R&D insights

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Need for strengthening international cooperation - Global safety regime

- Knowledge management and information sharing / networking
  - Information on IAEA safety standards
  - Sharing and creating knowledge / experience
  - issue: **competitive advantages**, language, cost, access
- Multinational agreements
  - Convention on Nuclear Safety, Joint Convention, Code of Conduct on Safety of Research Reactors

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Potential areas for IAEA activities

- Make IAEA safety standards a set of universally accepted and applied global standards
  - Facilitate development of common regulatory directions
  - Interface with industrial standards
- Full integration of IAEA safety standards and their applications
  - Provide review and assistance services
  - Facilitate safety technology transfer

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Questions for discussion

- How to achieve global recognition and acceptance of IAEA safety standards ?
- Enhanced role for Convention on Nuclear Safety and Code of Conduct for RR ?
- How to further develop industrial standards?
- International design certification ?
- Technology transfer rules ?
- Commercial interests impede sharing safety information ?

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