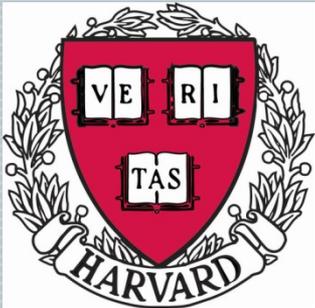


RSIS Roundtable- Post-Fukushima Nuclear Safety and Emergency Preparedness in the Asia-Pacific



Olli Heinonen
Foundation for Defense of Democracies
Belfer Center for Science and
International Affairs, Harvard Kennedy
School

28 October 2016



Change in the Nuclear Landscape



- While thirty countries currently use nuclear power, about the equivalent number of newcomer states are considering, planning or actively working to include it in their energy mix;
- New concepts: Build – Own – Operate;
- New safer reactor types are being developed;
- To ensure safe use of nuclear energy, enhanced international, including regional and bilateral collaboration, cooperation and capacity building is necessary.

Small Modular and Floating Reactors



Small Modular Reactor, USA

Floating Nuclear Power Plant, China



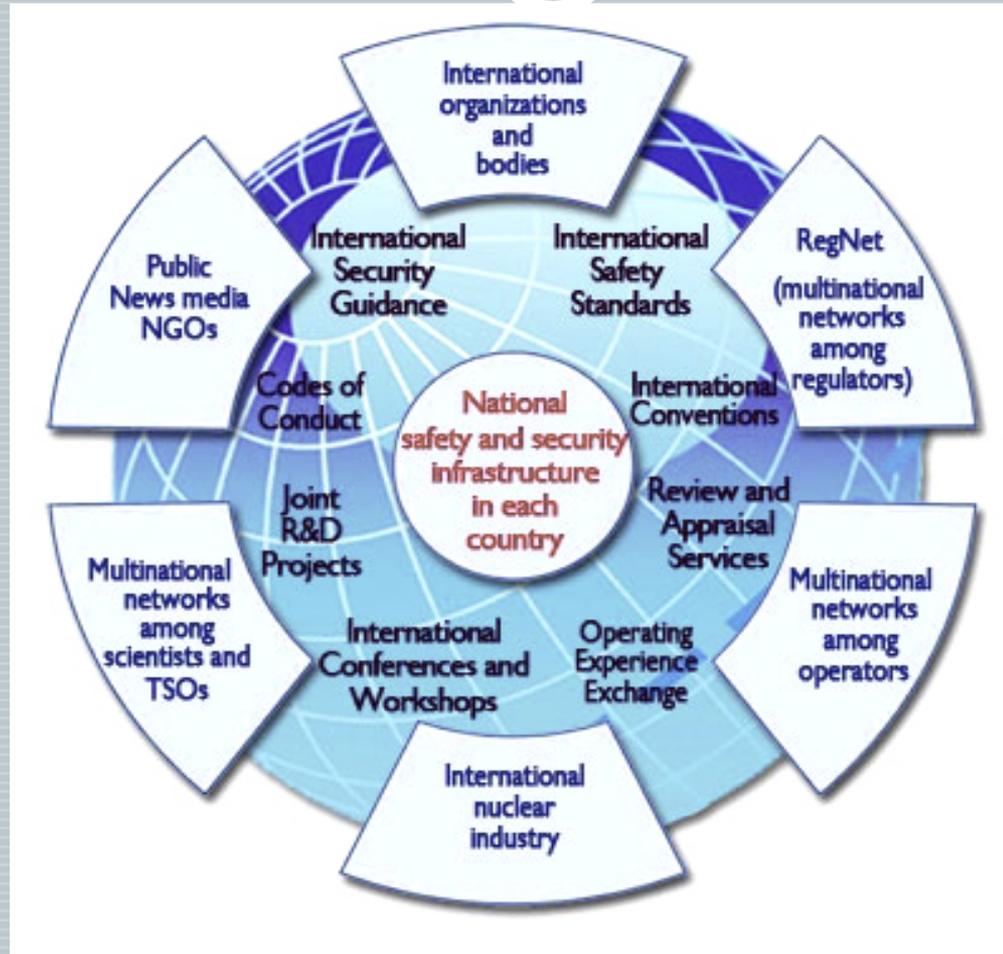
Lessons Learned from Shocks



- Three Mile Island
- Chernobyl
- 9/11
- Fukushima

All these accidents and events could have been avoided. But the analysis of them show how such accidents can be avoided by changing, inter alia, working practices and designs.

Global Nuclear Safety and Security



Nuclear Safety is a Regional Issue



Nuclear incidents can range from accidents with localized radiological impact to large-scale nuclear terrorist attacks with transnational spillovers that jolt national and regional economy, security and psychology in ways that extend far beyond the mere nuclear fallout.

Regional Issue with Regional Solutions



- Adhere to the latest IAEA legal instruments and the codes of conduct on safety, security, and safeguards, and also demonstrate their full compliance with their requirements;
- Share and exchange knowledge and experience and good practices;
- Explore mechanisms to build capacity in the region to allow states to make use of technologies that will facilitate the implementation nuclear projects in a sustainable manner;
- Cooperation should cover the nuclear industry, the regulatory bodies and the government oversight to ensure cohesive implementation of all commitments;
- Response should include also to incidents and emergencies related to transportation of nuclear and radioactive materials through or near the territories and possible terrorist acts;
- Be ready protect against and respond to new type of events such as cyber attacks.

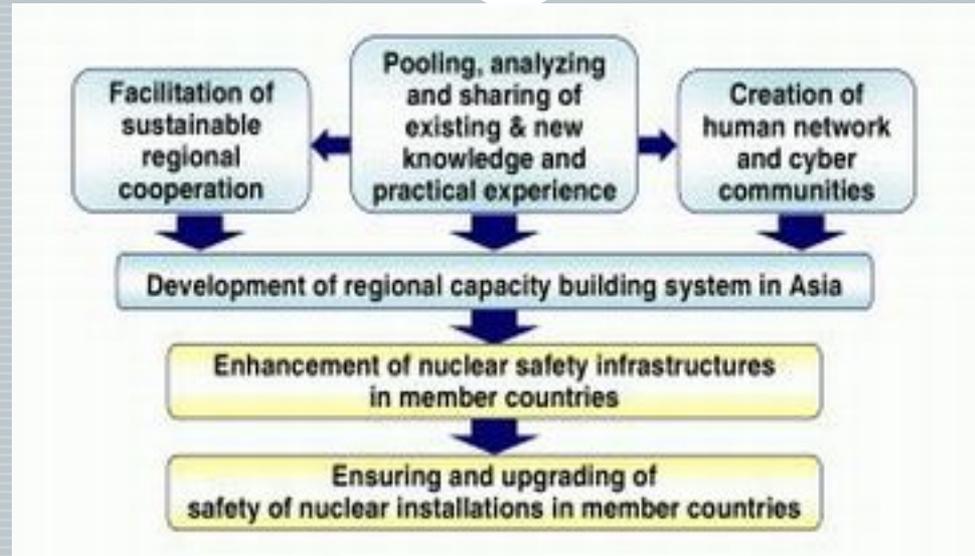
ASEAN Political Security Community Blueprint 2025

B.5.2. Develop a coordinated ASEAN approach to improve nuclear safety, in cooperation with the International Atomic Energy Agency and other relevant partners

- Promote the peaceful uses of nuclear energy in compliance with the IAEA safety, security and safeguards standards;
- Explore joint R&D projects in nuclear technology, with international organizations through workshops, seminars and exchange of experts;
- Encourage accession to the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, the Convention on Nuclear Safety and the Convention on Early Notification of a Nuclear Accident; and
- Strengthen the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM) and develop partnerships with regulatory bodies of other regions and relevant international organisations in order to contribute to nuclear non- proliferation, maintaining international standards of nuclear safety and security, preventing nuclear-related accidents and protecting against nuclear terrorism



Asian Nuclear Safety Network (ANSN)



Participating countries: Bangladesh, China, **Indonesia**, Japan, Kazakhstan, Republic of Korea, **Malaysia**, **the Philippines**, **Singapore**, **Thailand** and **Vietnam**;
Associate country: Pakistan
Supporting countries: Australia, France, Germany.

Convention on Nuclear Safety



The Convention commits legally participating States operating land-based nuclear power plants to maintain a high level of safety by setting international benchmarks to which States would subscribe.

Status as of 23 April 2015:

Brunei Darussalam
Cambodia, in force
Indonesia, in force
Laos
Malaysia
Myanmar
Philippines, signed
Singapore, in force
Thailand
Vietnam, in force

The Joint Convention



The Convention on *the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management* commits the participating States to achieve and maintain a consistently high level of safety in the management of spent fuel and of radioactive waste.

Status 26 September 2016:

Brunei Darussalam
Cambodia
Indonesia, in force
Laos
Malaysia
Myanmar
Philippines, signed
Singapore
Thailand
Vietnam, in force

Convention on the Physical Protection of Nuclear Material



The Convention obliges Contracting States to ensure during international nuclear transport the protection of nuclear material within their territory or on board their ships or aircraft.

Status 28 September 2015:

Brunei Darussalam

Cambodia, in force

Indonesia, in force with the amendment

Laos, in force

Malaysia

Myanmar

Philippines, in force

Singapore, in force with the amendment

Thailand

Vietnam, in force with the amendment

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency



The Convention sets out an international framework for co-operation among Parties and with the IAEA to facilitate prompt assistance and support in the event of nuclear accidents or radiological emergencies.

Status 7 August 2014

Brunei Darussalam

Cambodia

Indonesia, in force

Laos, in force

Malaysia, in force

Myanmar

Philippines, in force

Singapore, in force

Thailand, in force

Vietnam, in force

Convention on Early Notification of Nuclear Accident or Radiological Emergency



The Convention establishes a notification system for nuclear accidents that have the potential for international transboundary release that could be of radiological safety significance for another State.

Status 22 September 2014:

Brunei Darussalam

Cambodia, in force

Indonesia, in force

Laos, in force

Malaysia, in force

Myanmar, in force

Philippines, in force

Singapore, in force

Thailand, in force

Vietnam, in force

Code of Conduct on the Safety and Security of Radioactive Sources



The Code will help national authorities ensure that radioactive sources are used within an appropriate framework of radiation safety and security.

Status 17 August 2016:

Brunei Darussalam, conduct point designated

Cambodia, conduct point designated

Indonesia, political commitment and conduct point designated

Laos

Malaysia, political commitment and conduct point designated

Myanmar

Philippines, political commitment and conduct point designated

Singapore, political commitment and conduct point designated

Thailand, political commitment and conduct point designated

Vietnam, political commitment and conduct point designated

Code of Conduct on the Safety of Research Reactors



The Code strengthens the international nuclear safety arrangements for civil research reactors, taking due account of input from the International Safety Advisory Group (INSAG) of the IAEA and the views of other relevant bodies.

Brunei Darussalam

Cambodia

Indonesia #

Laos

Malaysia #

Myanmar

Philippines

Singapore

Thailand #

Vietnam

- # Countries with research reactor(s)

Nuclear and Radiological Emergencies



Events specific to nuclear installations

General Emergency

Site Area Emergency

Facility Emergency

Alert

Other event at a
nuclear installation

Radiological Events (not specific to nuclear installations)

Release from facility

Missing dangerous source

Severe overexposure

Space object re-entry

Elevated radiation levels of
unknown origin

Other radiological event

Criminal or other unauthorized acts

Criminal or other
unauthorized acts

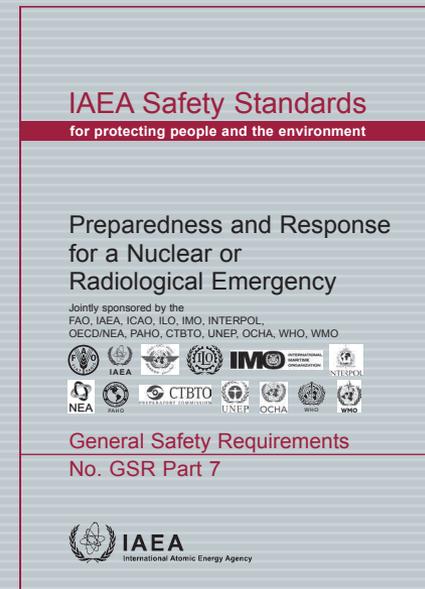
Incl. radiation threats,
explosion of RDD,
etc.

Emergency Preparedness

The goal of emergency preparedness is to ensure that an adequate capability is in place within the operating organization and at local, national, and the international level, for an effective response in a nuclear or radiological emergency.

The capability is an integrated set of infrastructural elements that include:

- authority and responsibilities;
- organization and staffing;
- coordination; plans and procedures;
- tools, equipment and facilities;
- training, drills and exercises;
- and a management system.



In Conclusion



- World's nuclear order requires states not only to adhere to the latest IAEA legal instruments and the IAEA codes of conduct on safety, security, and safeguards, but also demonstrate in an open and transparent way their full compliance with their requirements;
- The Asia-Pacific has a wealth of experience, which best practices, know-how and resources can be shared with the “newcomers”;
- There are vehicles to share those through the IAEA, and, in particular, within the ASEAN framework, and
- Be prepared to respond to unforeseen situations in unforeseen circumstances.