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

Olli Heinonen
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

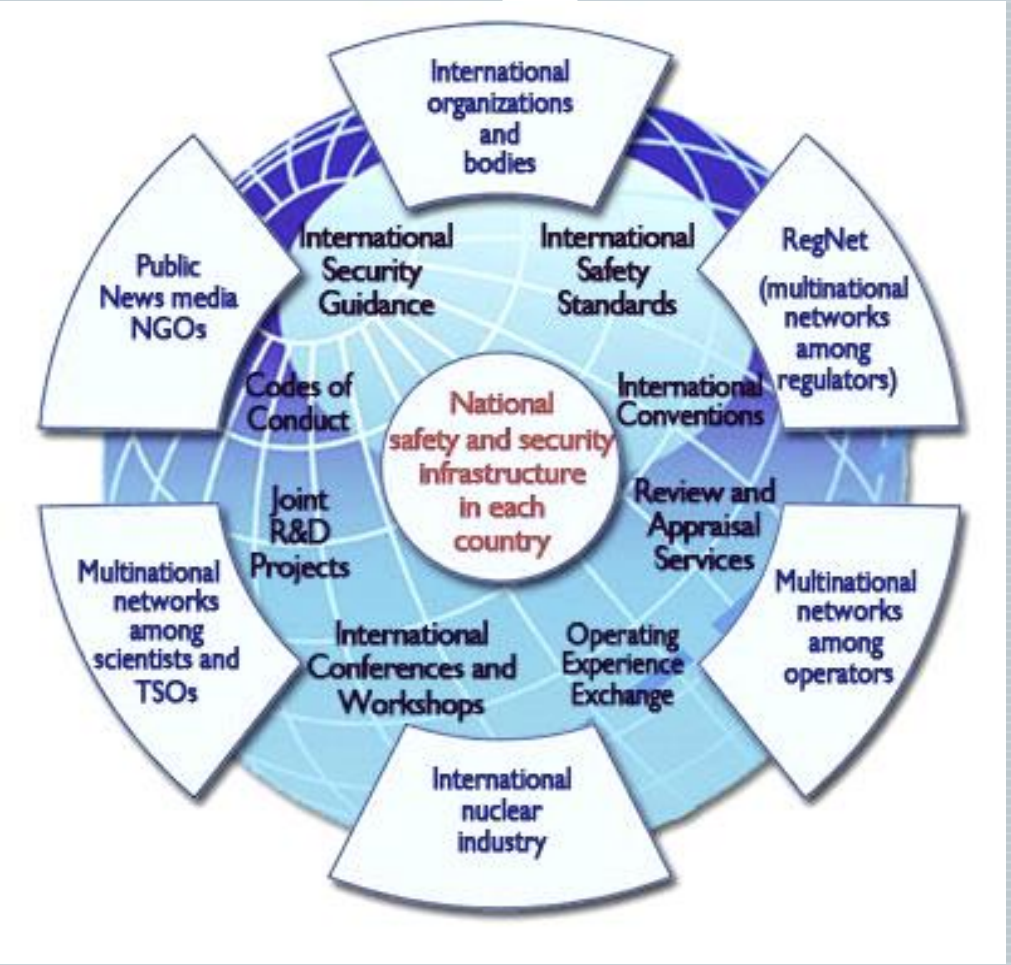
Lessons Learned from Shocks

- 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

ASEANTOM

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:

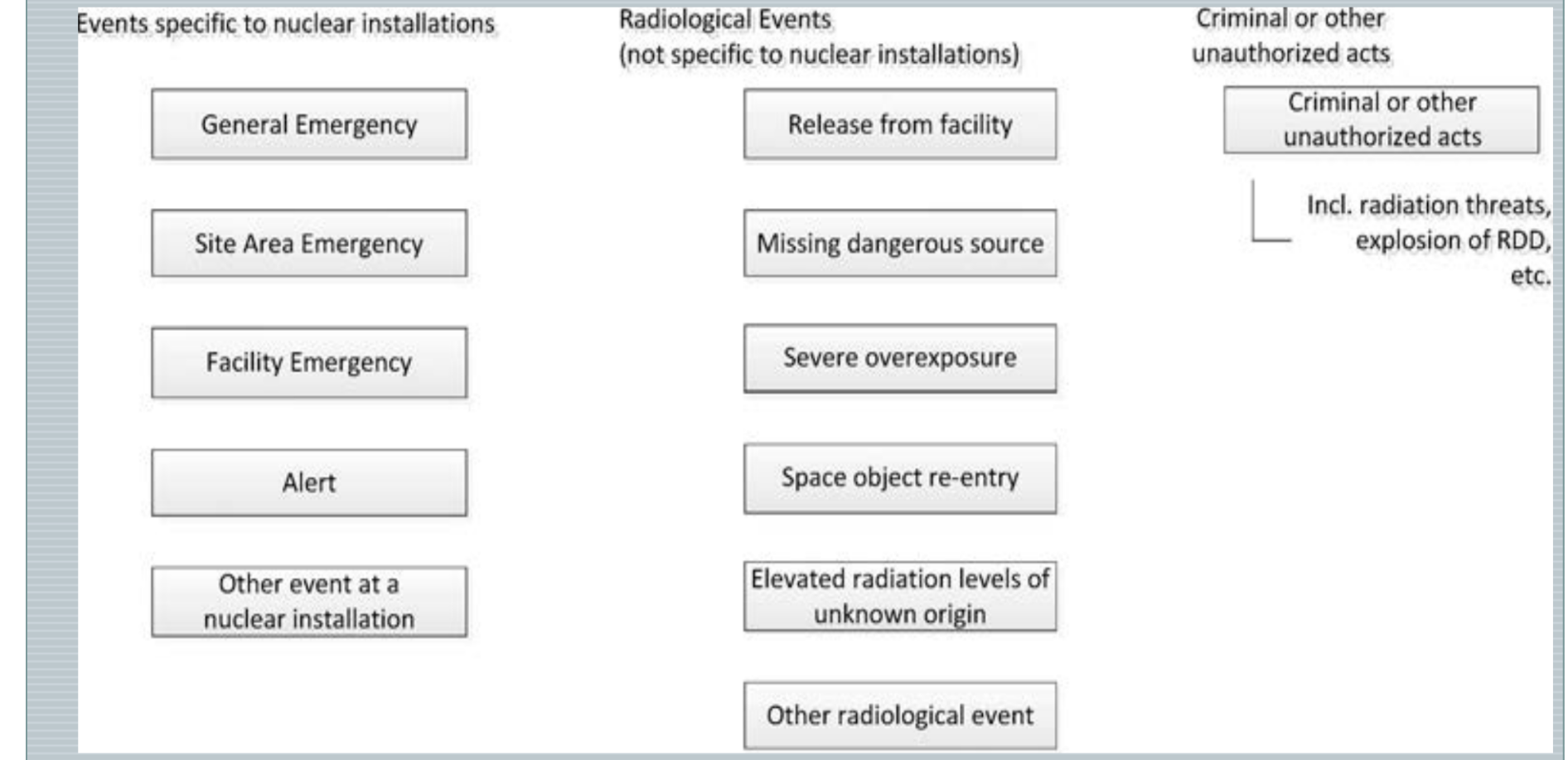
Brunei Darussalam, conduct point designated
Cambodia, conduct point designated
Indonesia, political commitment and conduct point designated
Laos
Malaysia, political commitment and conduct point designated
Myanmar
Philippines, political commitment and conduct point designated
Singapore, political commitment 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

Nuclear and Radiological Emergencies

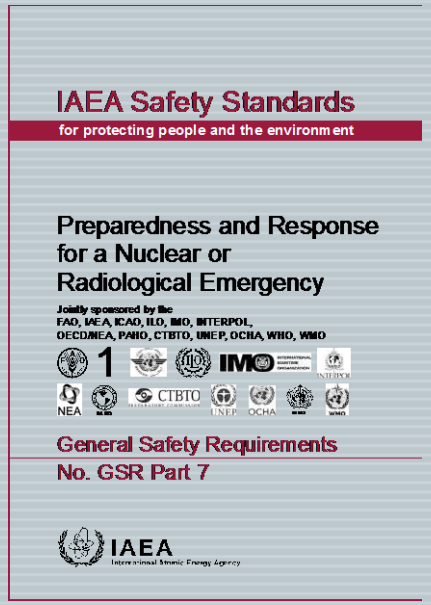


Emergency Preparedness

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.

- Back ground slides

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Requirements

- The emergency management system
- Roles and responsibilities in emergency preparedness and response
- Responsibilities of international organizations in emergency preparedness and response
- Hazard assessment
- Protection strategy for a nuclear or radiological emergency

Functional Requirements

- Managing operations in an emergency response
- Identifying and notifying a nuclear or radiological emergency and activating an emergency response
- Taking mitigatory actions
- Taking urgent protective actions and other response actions
- Providing instructions, warnings and relevant information to the public for emergency preparedness and response
- Protecting emergency workers and helpers in an emergency
- Managing the medical response in a nuclear or radiological emergency
- Communicating with the public throughout a nuclear or radiological emergency
- Taking early protective actions and other response actions
- Managing radioactive waste in an emergency
- Mitigating non-radiological consequences of a nuclear or radiological emergency and of an emergency response
- Requesting, providing and receiving international assistance for emergency preparedness and response
- Terminating a nuclear or radiological emergency
- Analysing the nuclear or radiological emergency and the emergency response

Infrastructure

- Authorities for emergency preparedness and response
- Organization and staffing for emergency preparedness and response
- Coordination of emergency preparedness and response
- Plans and procedures for emergency response
- Logistical support and facilities for emergency response
- Training, drills and exercises for emergency preparedness and response
- Quality management programme for emergency preparedness and response

ASEAN vs European Community

Can ASEAN Community use the EC as a model for nuclear cooperation?

- A collective path of peaceful and sustainable development and a viable political and economic partner for external powers.
- European Union started from the Steel Union and developed over several decades to a supranational structure.
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The Euratom Treaty – Nuclear Safety

- The Treaty provides the legal Framework to ensure the safe and sustainable use of nuclear energy across Europe and helps non-EU countries meet equally high standards of safety and radiation protection.
- The Nuclear Safety Directive (2009) and its latest amendment (2014) made the EU the first major regional nuclear energy actor with a legally binding regulatory framework as regards nuclear safety.
- By and additional a framework for the responsible and safe management of spent fuel and radioactive waste as established, and
- From 2013 the Directive lays down basic safety standards for protection against the dangers arising from exposure to ionising radiation.

Euratom Framework Programs

The Framework Programs focus on major issues and challenges in nuclear fission and radiation protection research:

- Management of radioactive waste
- Reactors systems and safety
- Radiation protection
  - Risks of low radiation doses
  - Radiation in medicine (protect patient and workers)
  - Emergency response (integration of national centers)
- Infrastructures (joint facilities)
- Human resources, mobility and training