Singapore International Energy Week (SIEW) 2016
RSIS Roundtable on Nuclear Safety & Cooperation and Emergency Preparedness in South East Asia
October 28 2016
SIEW2016 Singapore

Session 2: **The ASEANTOM and Regional Cooperation on Nuclear Safety in Southeast Asia**

Nuclear safety cooperation and emergency preparedness in ASEAN

Sabar Md Hashim
TNB Special Officer
(seconded to Economic Planning Unit,
Prime Minister's Department)
Malaysia

Content

- Energy – imperative new agenda
  - Nexus & interplay
- Stocktaking -mixed development
  - progresses and others having signs of holding pattern
- Structure and oversight
  - Nuclear safety
  - Regional Cooperation
    - Emergency preparedness
    - ASEANTOM
- Outlook

Content

- Energy – imperative new agenda
  - Nexus & interplay
- Stocktaking -mixed development
  - progresses and others having signs of holding pattern
- Structure and oversight
  - Nuclear safety
  - Regional Cooperation
    - Emergency preparedness
    - ASEANTOM
- Outlook

Energy – imperative agenda

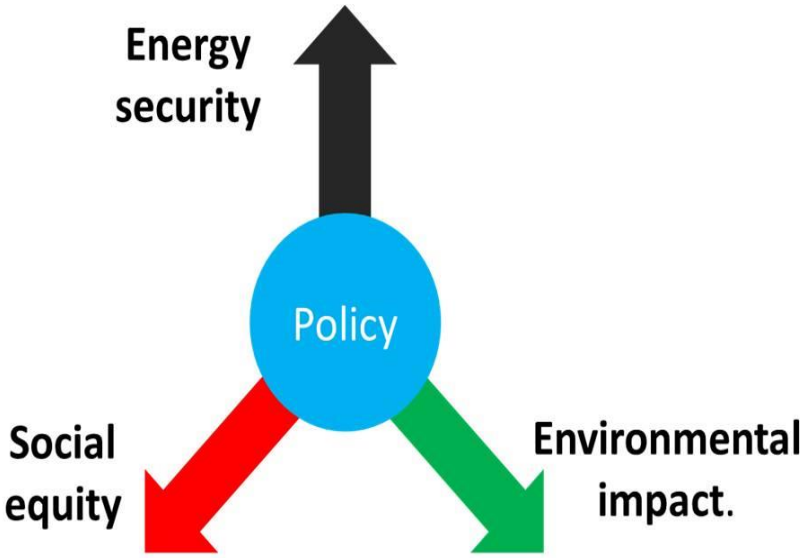
- **Energy drives growth** in each economy
  - Quite coupled but slowly decoupled
- Inclusive and competing objectives
- Governments also aware the global trend is going for **green growth or economy.**
- **Embracing sustainability and environmental friendly framework**
- SEA – mostly transition from developing to developed economy

Energy Trilemma
… and competing objectives

- Accessibility
- Affordability
- Sustainability

Competing objectives

- no more just least-cost approach
- It is critical to the progress of electricity supply industry and energy sector that the management of the regulatory environment judiciously balances the needs of all stakeholders while promoting rapid development.
- Diversity/options



… a case for nuclear & building blocks

- **For energy**
  - **Cheap – competitive advantage**
- **Could meet a nation's emission standard on its own or coupled with RE**
- **Raise energy profile**
- **Drivers for nuclear power include:**
  - **Policy direction;**
  - **capacity building:**
  - **human resources;**
  - **funding;**
  - **transparency;**
  - **governance**

- **HR - training program related nuclear power**

  Will require a multipronged approach via local programmes, international scholarship programmes, attachment in nuclear power plants in countries that have them, and customised programmes.

Content

- Energy – imperative new agenda
  - Nexus & interplay
- Stocktaking -mixed development
  - progresses and others having signs of holding pattern
- Structure and oversight
  - Nuclear safety
  - Regional Cooperation
    - Emergency preparedness
    - ASEANTOM
- Outlook

Stocktaking

- Civilian NPP development
  - Pretty much a Government thing
- Nuclear energy interest is addressed under ASEAN accord and governance– under purview of ASEAN Minister's Energy Meeting (AMEM)
  - Vietnam in driver seat
  - Thailand, Indonesia and Thailand and Malaysia could probably follow suit
  - Escalated to APSC
- Public acceptance is crucial
  - The last thing everyone want is activities that stoke fear to others
- Nuclear-related risk & incidence monitoring mechanisms are in place

Regional development

- Vietnam, Thailand and Indonesia slowly advancing
- The others like Malaysia still studying; working on public awareness, communications
- New development in Philippines
- Advanced nuclear nations like Korea, France, Russia, China are showcasing success stories
- Some knowledge-sharing, fora, collaboration
  - Key Activities implemented in 2015-2016, include**:** (i) ASEAN - US Workshop on Civil Nuclear Power (January 2016, Jakarta); (ii) ASEAN - IAEA Workshop on Nuclear Energy Cooperation (April 2016, Putrajaya); and (iii) ASEAN Nuclear Safety Network Programme (Regulators).

Malaysia – development

- Unfurling Communications Plan
  - Target is public acceptance
- Have been actively participating in IAEA events
  - Just had Integrated Nuclear Infrastructure Review (INIR)
- Todate Malaysia have signed
  - Convention of Early Notification of a Nuclear Accident [INFCIRC/335] in September 1987
  - Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency [INFCIRC/336] also in September 1987

- The Atomic Act and Regulation: Shall be tabled in 2017
- Catching up on where we have left off
  - This shall be followed by subsequent signing and ratification of other conventions and protocols

Content

- Energy – imperative new agenda
  - Nexus & interplay
- Stocktaking -mixed development
  - progresses and others having signs of holding pattern
- Structure and oversight
  - Nuclear safety
  - Regional Cooperation
    - Emergency preparedness
    - ASEANTOM
- Outlook

South East Asia is a growing economic grouping to be reckoned with and regionally well-positioned for shipping and movement of goods and materials

What are the stakes?

- Economy
  - Current share of trade
  - Future multilateral groupings
    - TPPA
    - RCEP
  - Energy is a vital cog
- Energy security and resource security – including routes of logistics
- Competing objectives – classical approach for least-cost versus inclusive approach that address overarching objectives such as environmental
  - Here nuclear energy seems to be attractive – joining RE as clean and green energy
- Connectivity
  - Crossborder RE trade potential (UNESCAP)
- Potential issues
  - Geopolitical and geostrategical ambitions
  - Worry on nonproliferation

Structure and oversight

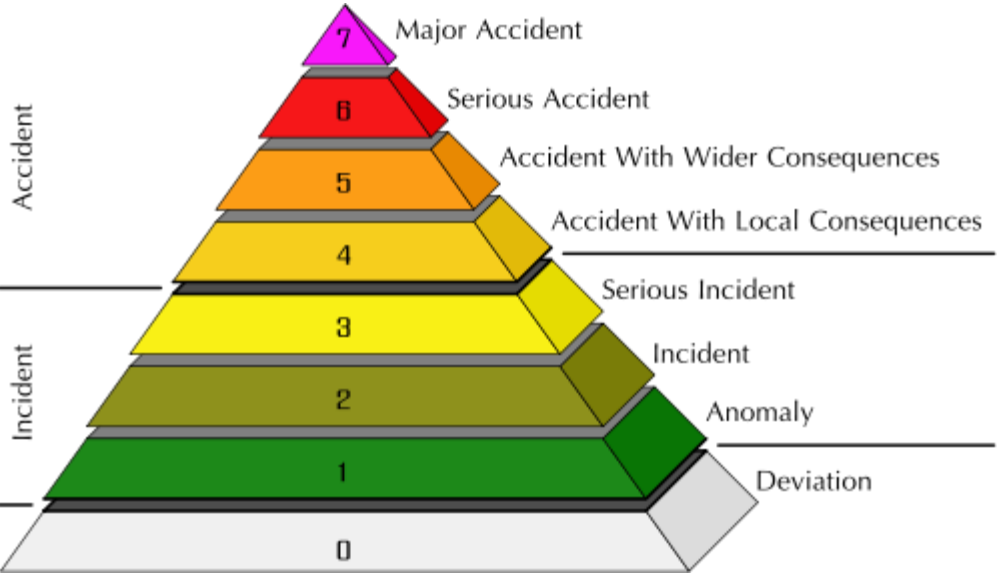
- Safety, security (after safeguard) are paramount important
- Oversight by IAEA and international communities
  - Track 1
  - Track 2

- Double oversight for ASEAN
  - AMEM (energy)
  - APSC (politics; security)
    - ASEANTOM

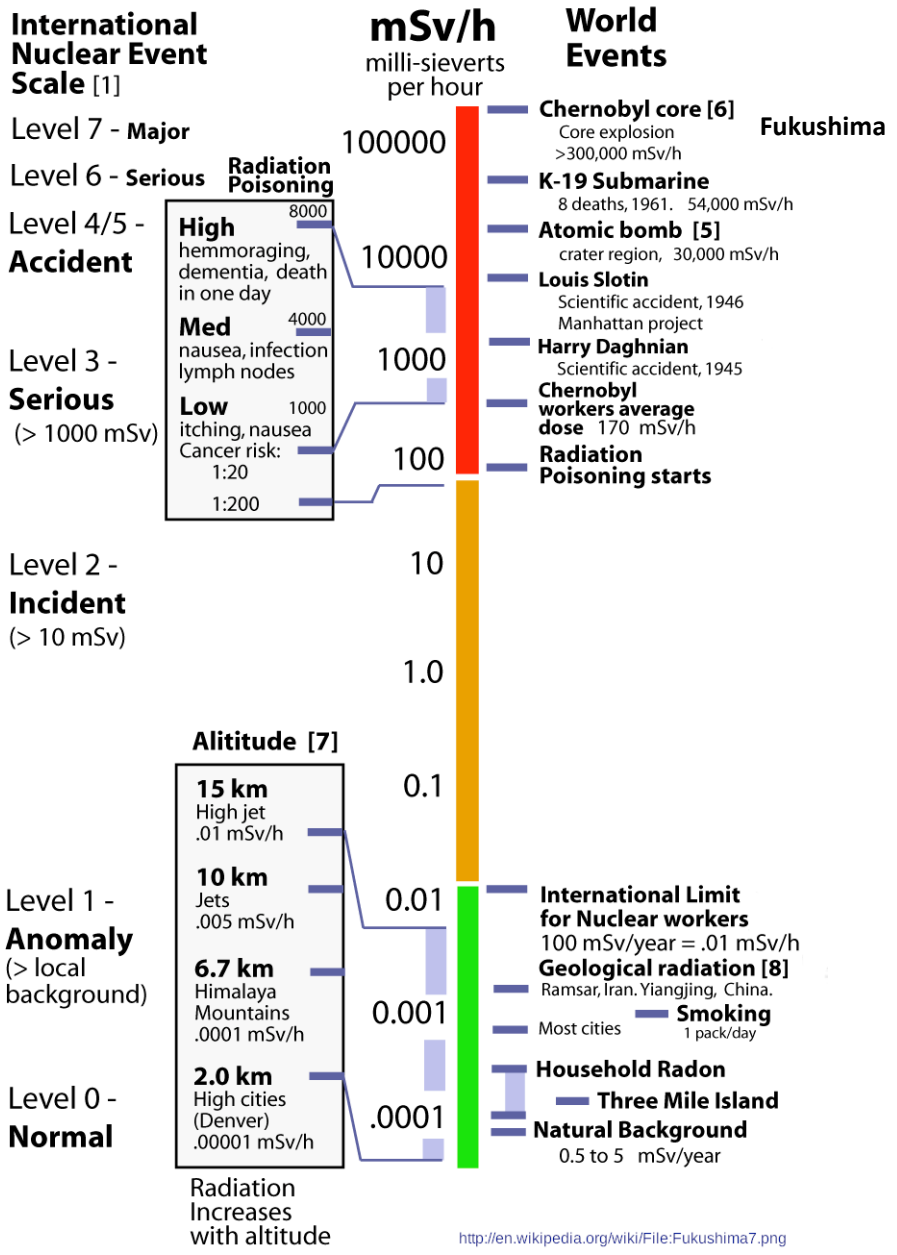
Safety

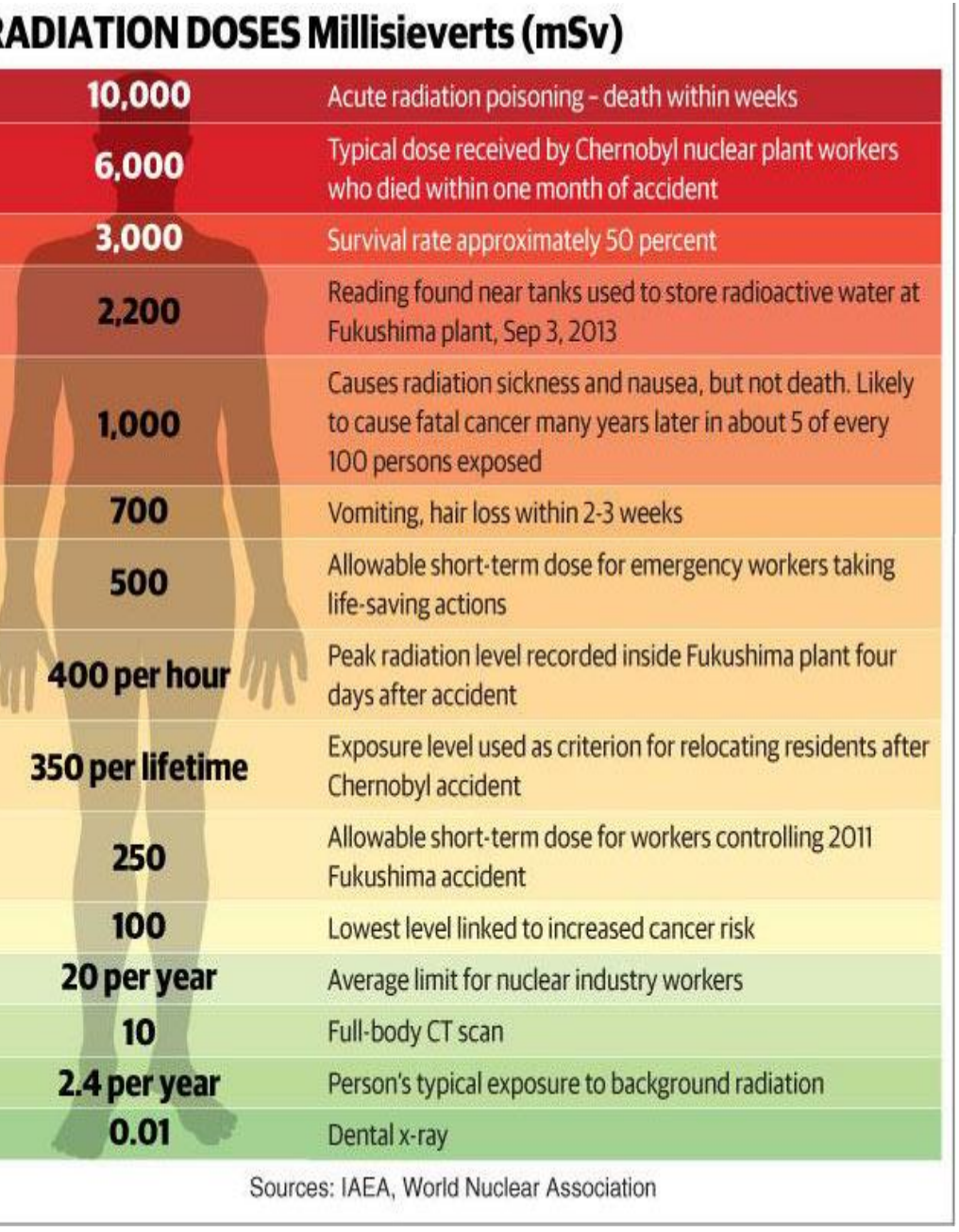
- **Nuclear safety** is defined by the International Atomic Energy Agency (IAEA) as "The achievement of proper operating conditions, prevention of accidents or mitigation of accident consequences, resulting in protection of workers, the public and the environment from undue radiation hazards". IAEA safety Glossary - Version 2.0 September 2006

IAEA, back in 1990, introduced International Nuclear and Radiological Event Scale (INES) in order to enable rapid communication-sharing and broadcast of safety-related information in case of nuclear incidents/accidents



Post-Incidence INES Scale





10,000
Fatal within weeks

6,000
Typical dosage recorded in those Chernobyl workers who died within a month

5,000
Single dose which would kill half of those exposed to it within a month

1,000
Single dose which could cause radiation sickness, nausea, but not death

400
Max radiation levels recorded at Fukushima plant 14 March, per hour

Lessons learnt from Japans' Fukushima

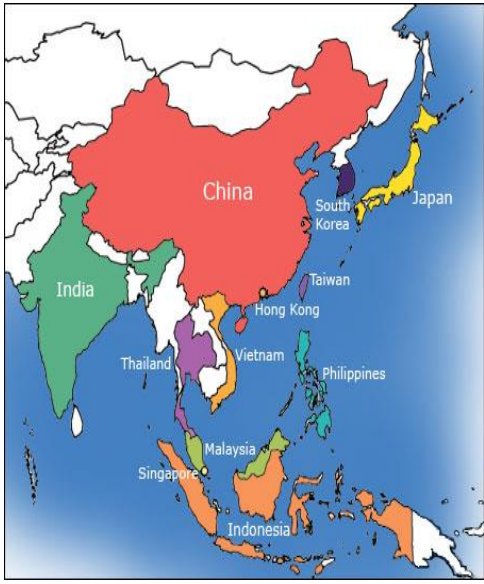
Malaysia's conditions – aftermath of Fukushima March 2011

1. Environmental Monitoring.

- Monitoring via Environmental Radiological Monitoring System (ERMS) at 6 locations through out Malaysia have shown that the **radiation level has been normal.**

2. Personnel Monitoring

- 56 flights from Japan have been scanned include passengers and crews
- 29 person have been scanned personally at AELB and Nuclear Malaysia
- The radiation **exposure has been normal**



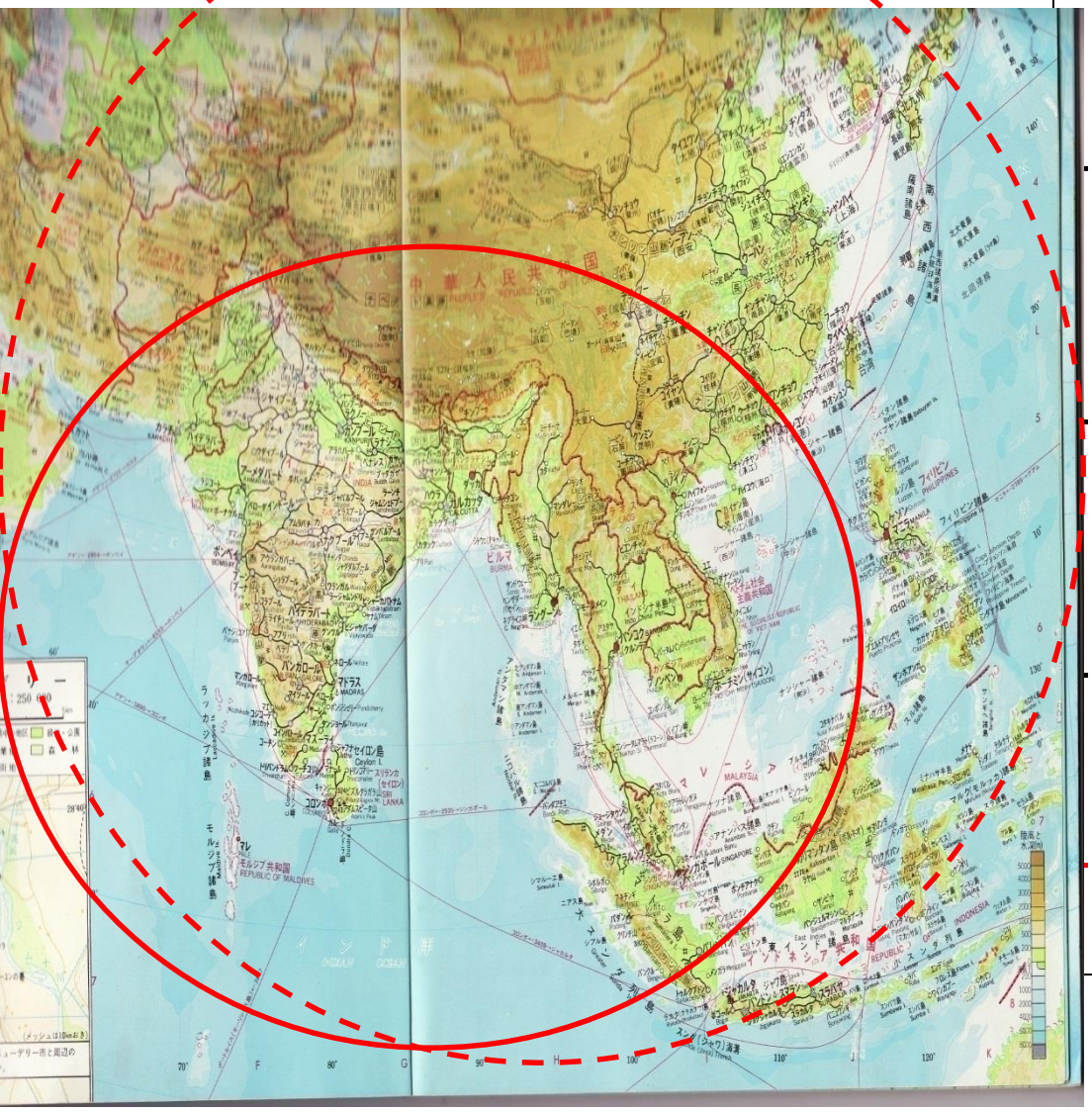
Malaysia was at 0.25 microSV/hour on 24th March

3. Food Monitoring

- **No food has been contaminated**
  as monitored by Ministry of Health

[source: AELB/MNA]

Safeguard and Security Control



- Importance of energy security and interdependence
- Importance of nuclear energy: energy security and environmental protection
- Importance of nonproliferation, nuclear security and nuclear disarmament
- Importance of environmental protection and interdependence
- Importance of regional cooperation

Security

- "'Nuclear security' is the **prevention and detection of, and response to, theft, sabotage, unauthorized access, illegal transfer or other malicious acts** involving nuclear material, other radioactive substances or their associated facilities. "

http://www-ns.iaea.org/standards/concepts-terms.asp

….physical parameter; military; defence

Safeguard

Timely detection of diversion of nuclear materials from peaceful nuclear activities to the manufacture of nuclear weapons, performed under agreements with IAEA

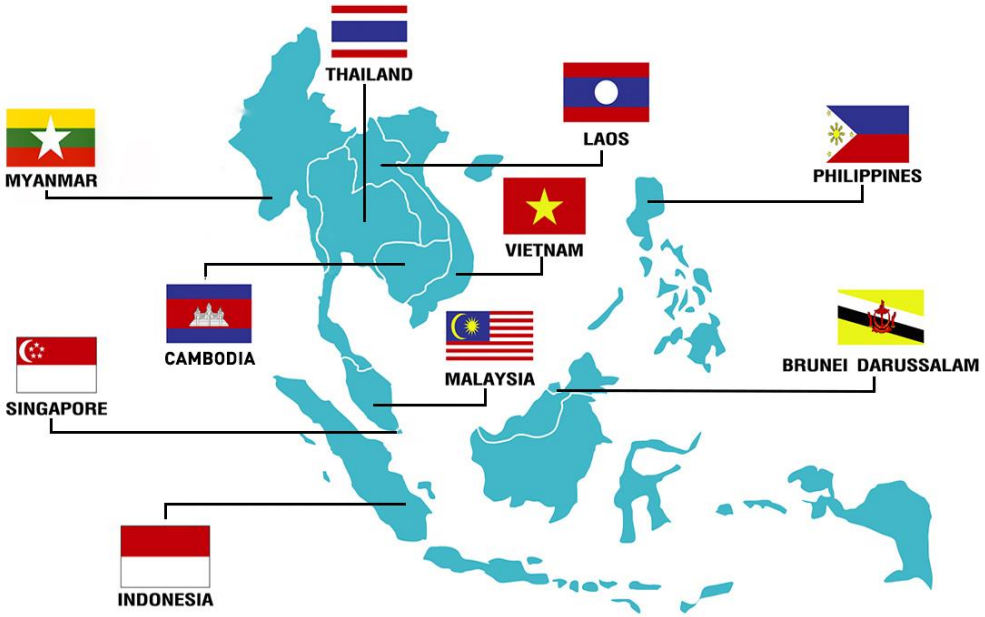
… role-playing of Government and authorities

… protocols, international laws, conventions, treaties etc

… preventive

Regional cooperation for nuclear

- **ASEAN MINISTERS ON ENERGY MEETING (***AMEM) - Nuclear Energy Cooperation Sub-Sector Network* (NEC- SSN)
- ASEAN Political-Security Community (APSC) – ASEANTOM
  - **APSC Blueprint (2016-2025)**



ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM)

Genesis/TOR

- **"…** cooperation on relevant nuclear issues amongst countries in the region… in order to promote confidence and trust, as well as to provide a security net and safeguards on possible adverse consequences of free movement of people and goods,….. Cooperation to help enforcement of relevant national nuclear security laws and regulations, …"
- Sep 3-4, 2013, Office of Atoms for Peace (OAP) hosted 1st Meeting of ASEANTOM to facilitate information exchange & cooperation in the area of nuclear safety, security and safeguards
- 25-27 Aug 2014 ASEANTOM Meeting in Chiang Mai, Thailand- included regional workshops & training courses "on emergency preparedness and response as well as nuclear security culture & management."
- Monitor any potential illicit trafficking and proliferation activity
- Under purview of AMEM too;
- Shall include Emergency Preparedness and Response (EP&R and ASEAN Agreement on Disaster Management and Emergency Response (AADMER). Also emphasized during ASEM Seminar in 2012 under auspices of Instrument for Nuclear Safety and Cooperation (INSC).

ASEAN – compliant with agreed protocols & measures

- Recognize the **importance of UN Security Resolution 1540 (2004) and the International Convention for the Suppression of Acts of Nuclear Terrorism (ISCANT) as key parts of international legal foundation for states to address and combat nuclear terrorism**
- Welcome assistance for Action Plan and depend on specific request of a recipient state.
- Technical expertise, capacity building, legislative and regulatory advisory; transfer f technology, physical protection improvement, strengthen customs and border control
- **Involvement for Post 2016 NSS. Beside Government own initiatives, we could anticipate activities centred on**
  1. **Voluntary/NGOs**
  2. **Industries**
- **Global Partnership (GP) against Spread of Weapons and Materials of Mass Destruction**.
  - Enhancement of National Nuclear Security Regimes
- **INTERPOL** – intelligence and database sharing on potential threats and terrorist
- IAEA's Nuclear Security Activities
  - Convention on Physical Protection of Nuclear Material (CPPNM)

Initiatives with regard to risk

- ASEAN well aware of nuclear-related risks, thus seeing things in 2-prong approach:
  1. Major catastrophe
     - Role of governments, institutions, regional response
  2. Trafficking, smuggling of materials
     - Countries to report to IAEA under Illicit Trafficking Database (ITDB)

- EU initiative in Chiangmai, Thailand Sep 2015
  - Jrodos- an off-site emergency management system for nuclear accidents
  - Common objective for SEA countries: how to share information when one is faced with such situation
  - Shipping or military - would voluntarily inform nearest authorities who in turn will get hold of regulatory body to inspect material
- National Security Support Centre (NSSC)
- ASEAN - ASEANTOM and AMEM
- NGOs

E.g. Malaysia

1. Location of radiation portal monitor (RPM) are at points of entry

- Seaports (littoral)
- Major airports (air)
- International borders (land)

2. Security-wise, beside having Environmental Radiological Monitoring System (ERMS), Malaysia also has capability of national security support. IAEA recognised Malaysia as the first SEA country to be accorded as national security support centre (NSSC) with regional role.

THE ESTABLISHMENT POST
ASEAN POLICIES NOT POLITICS, GOVERNANCE NOT GOVERNMENTS

IAEA Director General Yukiya Amano visits a public display at the project management offices for the Ninh Thuan nuclear power plant during his official visit to Vietnam.

Let Us Build an Asean Nuclear Crisis Centre

RECENT PO
- Stockbit: Buoyed b
- Myanmar Disconte
- Thai Gove Act' By Ce
- Hankerin App For T
- Simultan Not Help

Other regional development

- Indonesia Launched Center to Promote Nuclear Security Culture in Sep 2014 .National Atomic Energy Agency (BATAN) has established the Center for Security Culture and Assessment (CSCA) in Serpong, Banten Province, to improve and promote the culture of nuclear security in Indonesia.
- Thailand, Philippines and of course Vietnam also have their own equivalent Environmental Radiological Monitoring System (ERMS) or monitoring portals
- **Gamechanger**
  China-U.S. nuclear security center starts operation in March 2016.
  - The largest nuclear security center in the Asia-Pacific region, which was jointly financed by China and the USA, was opened in March 2016 in Beijing. This was the product of agreed way forward by both countries during 2010 NSS and thus symbolized significant achievement in China-U.S. nuclear security cooperation, which would boost cooperation in the Asia-Pacific region and the world
  - The center, constructed by the China Atomic Energy Authority (CAEA) and the U.S. Department of Energy
    - has capacity to train about 2,000 nuclear security staff from China and other Asia-Pacific nations each year.
    - is the largest nuclear program to receive direct Chinese and U.S. government funding.
    - will become a center for international exchanges and cooperation on nuclear security, the demonstration of advanced technology, testing and analyzing

Content

- Energy – imperative new agenda
  - Nexus & interplay
- Stocktaking -mixed development
  - progresses and others having signs of holding pattern
- Structure and oversight
  - Nuclear safety
  - Regional Cooperation
    - Emergency preparedness
    - ASEANTOM
- Outlook

Action plans – AMEM & APSC

- **Continuous learning and learning curve**
- **Continuous engagement with IAEA *et al***
- ***Capacity building***
- **Deliverables and KPI, *inter alia***
  - **Strengthen ASEAN cooperation on disaster management and emergency response**
  - **Preserve Southeast Asia as a region free from nuclear weapons and other weapons of mass destruction,** while contributing to global efforts on disarmament, non- proliferation and peaceful uses of nuclear energy
  - Ensure the effective implementation of the Southeast Asia Nuclear Weapon-Free Zone Treaty and its Plan of Action
  - **Develop a coordinated ASEAN approach to improve nuclear safety, in cooperation with the International Atomic Energy Agency and other relevant partners**
  - Support the establishment of regional nuclear weapon-free zones

Action plans – AMEM & APSC(cont.)

- Deep dive
  - Conduct technical study on nuclear safety and enhancing capacity for emergency planning.
  - Cross-border joint-exercise
    - assess the ability of the participating agencies in national coordination and international cooperation towards detection and response to nuclear and radioactive material;
    - (assess timeliness of information sharing relative to trans-border crime according to agencies' SOPs ;
    - to enhance frontline officer's capability to assess nuclear security threat at the border.
  - Build capabilities on nuclear energy, including nuclear regulatory frameworks, civilian nuclear safety on emergency response and preparedness, amongst policy makers and technical officers.

Shapes of things?

- **Involvement for Post 2016 NSS. Beside Government own initiatives, we could anticipate activities centred on**
  1. **Voluntary/NGOs**
  2. **Industries**
- Extra initiatives – post2016 gift baskets could continue
  - Including reports/new commitments
- **Global Partnership (GP) against Spread of Weapons and Materials of Mass Destruction**.
  - Enhancement of National Nuclear Security Regimes
- **INTERPOL** – intelligence and database sharing on potential threats and terrorist
- IAEA's Nuclear Security Activities
  - Convention on Physical Protection of Nuclear Material (CPPNM)

- **More activities under AMEM's ASEAN NUCLEAR ENERGY COOPERATION SUB-SECTOR NETWORK (NEC-SSN)**
- **More economic activities**
  - **China-ASEAN energy-related activities. So will be others**

- **Seamless sharing of information…seeing the big picture…some already well-broadcast in energy committees**

Communicate, communicate, communicate…

- Need to share more development
  - Preempt myopic view
  - Debunk worries
- Continue awareness programme
  - Eloquent spokespersons
  - Media – online information
- More collaboration

Thank you!