

# ISCN's Capacity Building Activities for Nuclear Security and Safeguards

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**Open Seminar on 5th Anniversary of FNCA Workshop on  
Nuclear Security and Safeguards Project  
September 8, 2015, Kurchatov, Kazakhstan**

# Outline

- ◆ Japan's Capacity Building Support Activities in 3S
- ◆ Capacity Building Activities of ISCN in Nuclear Security and Safeguards
  1. Establishment of ISCN
  2. Main Activities and Cooperation with Other Organizations
  3. 3. Capacity Building Assistance through Human Resource Development Including Training and Education

# **Japan's Capacity Building Support Activities in 3S**

# Japan' Nuclear Human Resource Development Network supporting Asian countries

## Ministry of Education, Culture, Sports, Science and Technology(MEXT)

Nuclear Safety, Research Reactor, Basic Research etc.

### Japan Atomic Energy Agency (JAEA)



Nuclear HRD network Secretariat  
Nuclear HRD Center (NuHRDeC)

- Training in Japan (Nuclear technology, Site preparation and public relations, Plant safety)
- Dispatch of Experts: Follow up program for instructor training

### Integrated Support Center for Nuclear Non-Proliferation and Nuclear Security (ISCN)

- Training in Japan (Safeguards, Nuclear nonproliferation, Security)
- Dispatch of Experts

### Nuclear Safety Research Association (NSRA)



- MEXT Nuclear Researchers Exchange Program (Eligible country: FNCA)
- FNCA -ANTEP

## Academia

### University Network



### Lectures for NPP-introducing countries

(Secretariat) Tokyo Institute of Technology  
(Participating University) Ibaraki University, Osaka University, Okayama University, Kanazawa University, Kinki University, Kyushu University, Kyoto University, Tokai University, Nagoya University, Hachinohe Institute of Fukui, Hokkaido University, University of Yamanashi

### The University of Tokyo

Nuclear Safety Security Exercise Network  
Global Professional Course



## Ministry of Economy, Trade and Industry(METI)

Agency for Natural Resources and Energy  
(NPP-promoting -body)

### Japan Atomic Industrial Forum(JAIF)



### Japan International Cooperation Center (JICC)

- Acceptance of Trainee
- Dispatch of experts

## Industry

### The Japan Atomic Power Company (JAPCO)



### International Nuclear Energy Development of Japan (JINED)



Electric Power Companies

(Hokkaido, Tohoku, Tokyo, Chubu, Hokuriku, Kansai, Chugoku, Shikoku, Kyushu)

TOSHIBA, HITACHI,

Mitsubishi Heavy Industries  
-Acceptance of Trainee

### Fukui International Human Resource Development Center for Atomic Energy (FIHRDC): The Wakasa wan Energy Research Center (WERC)



## Ministry of Foreign Affairs (MOFA)



### Japan International Cooperation Agency (JICA)

- Acceptance of Trainee

### Cabinet Office (CAO)

- Japan Atomic Energy Commission
- Nuclear Safety Commission of Japan

## Ministry of the Environment (MOE)

### Nuclear Regulation Authority (NRA)

- Regulate nuclear activities in Japan: Safety, Security, Safeguards
- Cooperation with partner countries
- Support to emerging nuclear states based on agreement

# Japan-IAEA Joint Nuclear Energy Management School

- 1st : 11-29 June 2012 in Tokai-mura
- 2nd : 27 May-10 June 2013 in Tokyo and Tokai-mura
- 3rd : 9-26 June 2014 in Tokyo and Tokai-mura
- 4th: 1-17 June 2015 in Tokyo and Tokai-mura

**Duration:** Two and a half week

**Style:** lectures, site visits, discussions, group works, presentation and facility visits

## Topics:

- Energy Policy Making and the Role of Nuclear Power
- Management of New Nuclear Power Projects
- Nuclear Material Control
- Protecting People and the Environment
- Developing National Capacity for Nuclear Energy

## Participation:

Young professionals (preferably less than 40 years old) with managerial potential who have worked in the nuclear field at least for 3 years and shall make good use of the fruits of the Management School for their current and/or future jobs from targeted countries.

<http://www.nuclear.jp/nem2015/>



Japan-IAEA Joint Nuclear Energy Management School 2015  
1~17 June  
at the University of Tokyo and Tokai-mura, Japan

**Certificate Course**

**4 benefits of participating in this school**

- To gain awareness of the most important topics related to the peaceful use and knowledge such as energy policy, economics, nuclear safety and security, radiation risk management and knowledge management.
- To take lectures delivered by internationally recognized experts from the IAEA, Japan and other countries. You are guaranteed to be learning from some of the finest minds in the field.
- A unique opportunity to broaden your horizons and meet people interested in nuclear energy from all over the world.
- Valuable opportunities to visit Fukushima Daiichi NPS, manufacturers, advanced research reactor and training facilities.

**Purpose**

To provide an international educational experience aimed at building future leadership to manage nuclear energy programmes to young professionals from newcomer countries and countries with established nuclear programmes.

**Preferred participants**

Young professionals under 40 with managerial potential

Policy makers, employees of NPPs, R&D organizations, utilities, regulators, suppliers, education and training organizations

**Target countries**

Bangladesh	Lithuania
China	Malaysia
Czech Republic	Poland
Estonia	Republic of Korea
Finland	Saudi Arabia
Indonesia	Thailand
Japan	Turkey
Kazakhstan	United Kingdom
Latvia	Viet Nam

**All participants will be expected to be actively involved in discussions.**

Further information about application and the programme will be posted on our website  
<http://www.nuclear.jp/nem2015/>

Contact organization **JICC** E-mail: [toba-a@jaif-icc.com](mailto:toba-a@jaif-icc.com) [okano-s@jaif-icc.com](mailto:okano-s@jaif-icc.com)

**Organizers**

JN-NRD-NET, IAEA International Atomic Energy Agency (IAEA), JAEA Japan Atomic Energy Agency (JAEA), The University of Tokyo, JAIF Japan Atomic Industrial Forum (JAIF), JICC JAIF International Cooperation Center (JICC)

# **Capacity Building Activities of ISCN in Nuclear Security and Safeguards**

# 1. Establishment of Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN)

## **Japan's National Statement at 2010 Nuclear Security Summit :**

Establishment of an integrated support center for nuclear nonproliferation and nuclear security in JAEA to contribute to strengthening nuclear security in Asia and other regions and development of technology related to measurement and detection of nuclear material and nuclear forensics based on international cooperation



**On December 27, 2010, ISCN was established in JAEA.**



## **Japan PM Speech at 2012 Nuclear Security Summit**

“In particular, through our "ISCN" established in late 2010, Japan will expand its hosting and training of human resources. “

## **Japan PM Speech at 2014 Nuclear Security Summit**

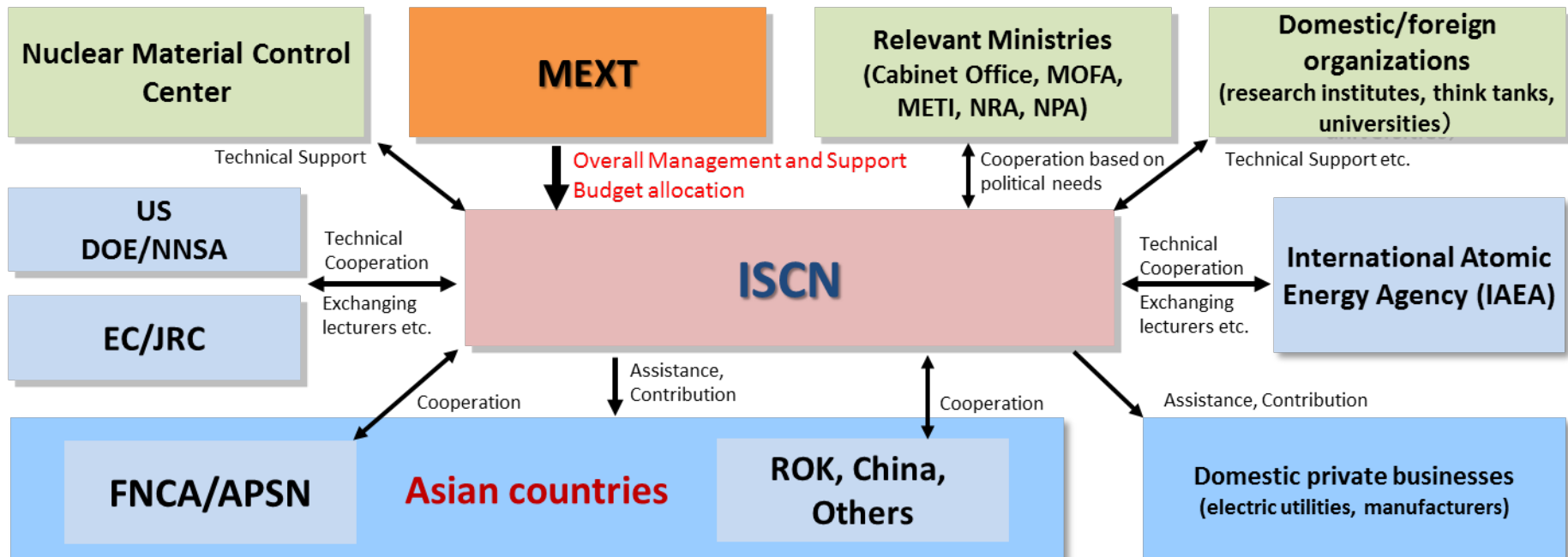
We will reinforce the activities of ISCN, established in December 2010 as the first CoE in Asia, in order to contribute to the human resource development and capacity building of other countries.



## 2. Main Activities and Cooperation with Domestic/Foreign Organizations

- (1) **Capacity building assistance through human resource development**
- (2) Technology development and support regarding the measurement and detection of nuclear materials and nuclear forensics
- (3) Support for CTBT and denuclearization
- (4) Policy research on nuclear nonproliferation
- (5) Support for nuclear material transport and management of research materials

### Structure of cooperation with domestic/foreign organizations





## 3. Capacity Building Assistance through Human Resource Development Including Training and Education

### Three Courses

1. Nuclear security course
2. Safeguards and SSAC\* course (\* State system of accounting for and control of nuclear material)
3. International nonproliferation framework course

### Objective

To help ensure that all existing nuclear material is used exclusively for peaceful purposes and is used sufficiently protected against theft and sabotage through:

- Knowledge-sharing,
- Experience-sharing,
- Support for legal development , and
- Hands-on training for state system of accounting for and control of nuclear material (SSAC) and physical protection of nuclear material.

### Needs Oriented Approach:

#### Different Target Participants for Different Programs

- International/Regional Course
- Bilateral Support or Dispatching Course
- Domestic Course



## (3.cont) Needs Survey Mission to Asian Countries

Even after the accident of Fukushima Daiichi Nuclear Power Station, all countries visited had high expectations for the trainings and seminars to be held in the ISCN, and aspired to participate.

(2010): Thailand, Malaysia, Singapore, Philippines, Indonesia, Vietnam

(2011): Kazakhstan, Vietnam, Indonesia, Mongolia, Malaysia, Bangladesh

(2012): Mongolia, Jordan, Lithuania, Malaysia, Turkey

(2013): Ukraine, Bangladesh

(2014): Turkey, Indonesia, Saudi Arabia

(2015): UAE

### ❑ Common and varied needs

- Welcoming increased opportunities for training
- Requests for cooperation in their national training centers
- Coordination of various training functions, Overcoming language barrier

### ❑ Human resource development plan in preparatory stage

- Plans to introduce nuclear power and for human resource development
- Flexibility to meet the needs

### ❑ Expectations for practical training courses

- Exercises using facilities or equipment
- Months-duration training to acquire practical experience
- Experience in realistic environment (Expectations for VR technology)
- Training for trainers



Indonesia ( BAPETEN )



Mongolia (NEA)

# 3.1.1 Nuclear Security Course

## Physical Protection

- ◆ Physical Protection for Nuclear Material and Facilities
- ◆ IAEA guidelines including INFCIRC/225/Rev.5
- ◆ Physical Protection Detection System Performance Testing
- ◆ PP Inspector Training
- ◆ Insider Threats
- ◆ PP Measures against Sabotage
- ◆ Security of Radioactive Sources

## Nuclear Security Culture

- ◆ ISCN-WINS Workshop
- ◆ Workshop on Nuclear Security Culture

## Other

- ◆ Cybersecurity

## Bilateral Cooperation

- ◆ Seminar on Nuclear Security

- Needs-oriented courses to targeted participants  
- Domestic, International/regional and Bilateral courses

**Activity Results of 2011 - August 2015**

**Total 1412 participants in 56 courses**

## <For Effective Learning>

### Lectures



### Group Exercises



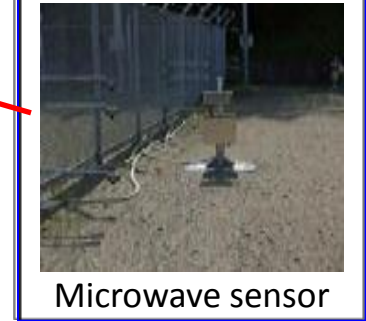
### PP Exercise Field



### Virtual Reality System



# 3.1.2 Physical Protection Exercise Field



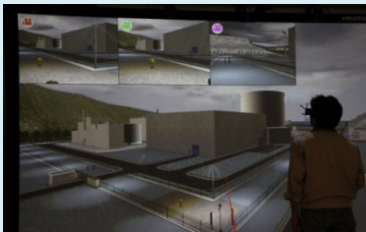
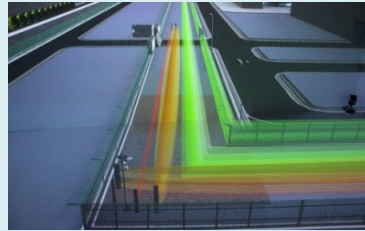
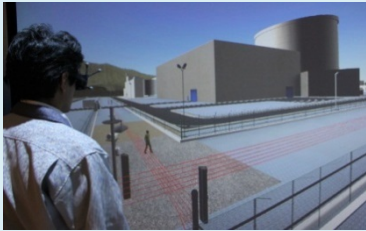
Recent Development: Thermal camera, new buried E-field sensor, Free-standing X-field sensor, Circle gate system, Laser sensor

## 3.1.3 Virtual Reality (VR) System

- **Enhance effectiveness** of the training
  - difficult to conduct nuclear-security training using **real nuclear facilities**
- Provide a practical training environment for **experience-oriented** and **interactive** lessons on nuclear security through a **virtual experience** of **observing the inside/outside of a nuclear facility**



Learning the characteristics of a facility and its physical elements by examining a three-dimensional view of the facility



Verify monitoring functions and image features of cameras and sensors



Learning skills for handling contingency in a virtual central alarm station



camera



sensors



metal detection



Verify installation and functions of security tools

## 3.1.4 ISCN-WINS Workshop

Workshop offered for Japanese operators and related governmental agencies: 1.5 days

**Co-hosted** by: WINS

JFY2015 Workshop to be held in December 2015

**Achievements:** Held each JFY,  
JFY2011(50 participants) ⇒ JFY2012(63 participants) ⇒ JFY2013(69participants)

### **Theme:**

JFY2011: Nuclear Security and Corporate Governance in Post-3/11 Japan

JFY2012: Collaboration with Outside Organizations for Strengthening Nuclear Security

JFY2013: Information Disclosure, Assurance, and Insider Threat”

JFY2014: Synergy between nuclear security and safety

**Theater-based Session** : professional actors perform a nuclear-security-event scene based on a specific scenario, followed by discussion among participants on that story.

Feedback from the participants showed that the theater-based sessions were extremely well received. Unlike general lectures or presentations, they provided a more realistic sense of the situations and threats. Also the actors’ dramatic performance contributed to a sense of tension. The interest created by the session style led to concrete discussions that greatly benefited the participants.



## 3.1.5 Nuclear Security Course: **Bilateral Cooperation**

### •Vietnam

#### **Seminar on Nuclear Security (2011)(2014)**

Co-hosted by: MOST/VARANS, MOIT

#### **Seminar on Nuclear Security (2015)**

Co-hosted by: MOST/VARANS, MOIT (Target: future operator and local stakeholders)

Topics: Introduction to nuclear security and physical protection



### •Kazakhstan

#### **Seminar on Nuclear Security (2012)**

Co-hosted by: Atomic Energy Agency of Republic of Kazakhstan

Topics: International instruments, INFCIRC/225/Rev.5



### •Lithuania

#### **Workshop on Nuclear Security ~ for the enhanced nuclear security across the borders~ (2013)**

Co-hosted by: Lithuania Nuclear Security Centre of Excellence (NSCOE) and EC Joint Research Centre (EC JRC)

Cooperated by: US Department of Energy/ National Nuclear Security Administration (DOE/NNSA)

Topics: Border security monitoring, exercises



### •Turkey

#### **National Workshop on Evaluation of Nuclear Security Plan (2015)**

Co-hosted by: Turkish Atomic Energy Authority (TAEK)

Cooperated by: DOE/NNSA

Topics: Consideration for a regulator to evaluate nuclear security plan

## 3.2.1 Safeguards and SSAC Course

### International Training Course (ITC) on SSAC

- ◆ International Safeguards, its framework, requirements, method and technic
- ◆ Nuclear Material Accounting and Control (Record/ Report)
- ◆ Additional Protocol(declaration /Complementary Access(CA))
- ◆ Safeguards experience of countries
- ◆ Establishment and maintenance of national system.

### IAEA Inspector Training

- ◆ Safeguards in Reprocessing Plants
- ◆ DCVD Training for Spent Fuel Verification

### Bilateral Cooperation

- ◆ Workshop & Seminar on the Additional Protocol (AP) Declarations
- ◆ SG Training

- Needs-oriented courses to targeted participants  
- International and Bilateral

**Activity Results of 2011 - August 2015**

**Total 320 participants in 16 courses**

### <For Effective Learning>

ITC Lectures



ITC Exercises



Reprocessing Plant training



DCVD training

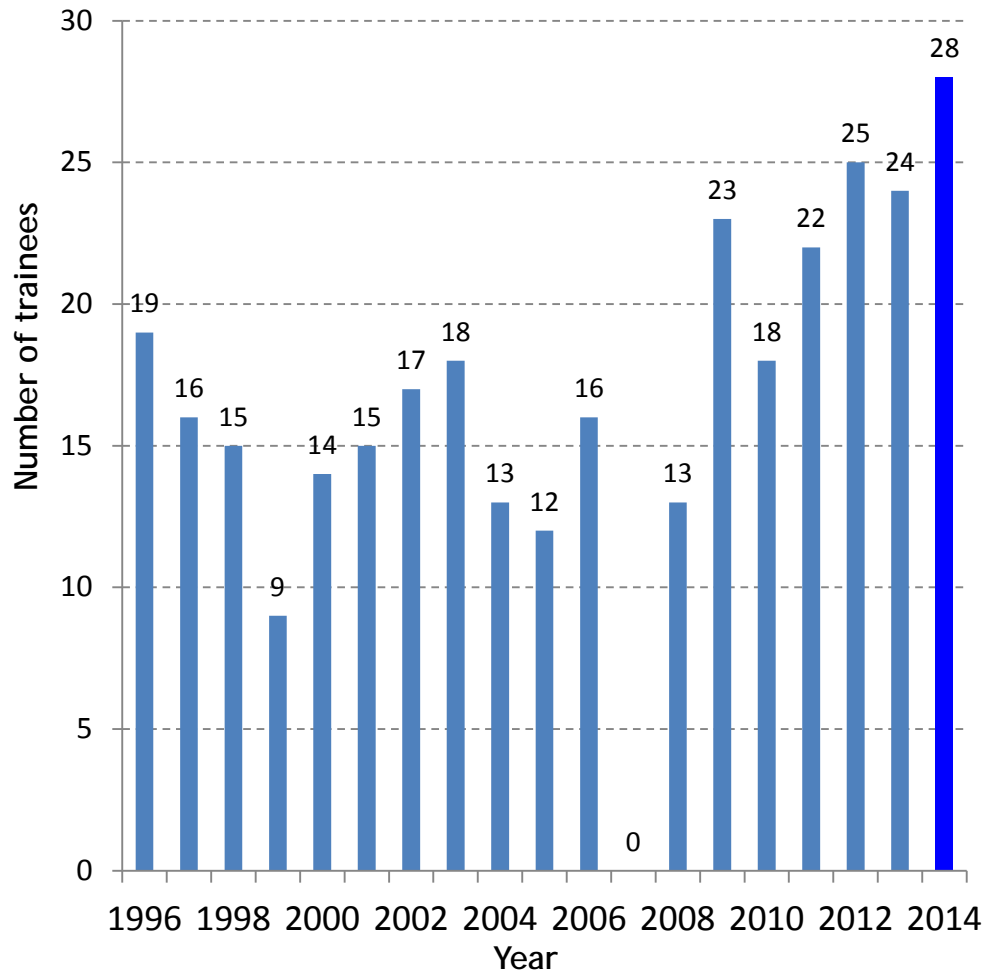




# 3.2.2 Safeguards/SSAC Course, JAEA/ISCN Experience

JAEA's long experiences of offering SSAC courses from 1996, even before the establishment of ISCN.

317 participants from 51 countries in total between 1996 to 2014 (1996-2010: JAEA, 2011- : ISCN)



Country	# of Trainee
Armenia	10
Australia	6 +1
Azerbaijan	1
Bangladesh	7
Belarus	8
Bulgaria	5
Cambodia	4
China	19
Czech	4
Estonia	1
Georgia	1
Hungary	2 +1
Indonesia	26 +1
Japan	22 +2
Jordan	2
Kazakhstan	13 +1
Korea	15 +1
Kyrgyz	1
Lao	2
Latvia	3 +1
Lithuania	6 +1
Malaysia	18 +2
Moldova	2
Mongolia	4
Myanmar	5
Nepal	2

Country	# of Trainee
Philippines	6
Romania	4 +1
Russia	15 +1
Singapore	1
Slovak	4
Tajikistan	1
Thailand	19 +1
Turkey	4
UAE	3
Ukraine	16
Uzbekistan	6
Vietnam	21
Algeria	1
Brazil	1
Egypt	1
Georgia	1
Ghana	1
India	1
Iran	2
Mexico	1
Niger	1
Serbia	1
South Africa	1
Sweden	1
Switzerland	1
<b>TOTAL</b>	<b>317</b>

(Red: 2014)

# 3.3 International Nonproliferation Framework

## Course

### Seminar on Peaceful Uses of Nuclear Energy and Nuclear Nonproliferation, Security (Bilateral cooperation)

#### **【Objectives】**

- (1) Share the understanding among the all relevant parties of the importance to ensure nuclear nonproliferation and nuclear security for benefiting from peaceful uses of nuclear energy;
- (2) Review the international nuclear nonproliferation and nuclear security regime and understand its components and required national systems, including legal instruments, regulatory capacity, and human resource development; and
- (3) To identify elements for possible cooperation plan between targeted state and Japan for the enhancement of nuclear nonproliferation and nuclear security.

**Activity Results of 2011 - August 2015**  
**Total 649 participants in 14 courses**



# 3.3.2 International Nonproliferation Framework Course -Bilateral Cooperation Developments with Partners-

	2007	2008	2009	2010	2011	2012	2013	2014	2015
Vietnam	▽	▽	▽	▽	▽	▽	▽	▽	▽
Thailand		▽	▽						
Indonesia	▽			▽				▽	▽
Kazakhstan			▽	▽	▽	▽			
Mongolia					▽	▽			
Malaysia					▽	▽	▽	▽	
Jordan						▽	▽	▽	
Turkey						▽	▽	▽	▽
ASEAN Center for Energy							▽		▽
Lithuania						▽	▽	▽	
Ukraine							▽	▽	
Bangladesh							▽	▽	
Saudi Arabia								▽	▽
United Arab Emirates									▽

AP Ratification  
CPPNM & Amendment  
Ratification

Activities in NPSTC

Activities in ISCN

▽: Meeting or Need survey  
▽: SG

▽: International Framework Seminar  
▽: Nuclear Security

CPPNM: Convention on the Physical Protection of Nuclear Material

## 3.4 Participants' Visit to the Bombed Area (Hiroshima or Nagasaki)

ISCN has included a visit to the bombed area (Hiroshima or Nagasaki) in its two-week training courses (RTC on Nuclear Security and ITC on SSAC) curriculums. The visit provides participants from other countries with an opportunity to think about the threat of nuclear proliferation as well as to promote better understanding of nuclear nonproliferation and nuclear security.

### < Participants' Voice >

It was my first visit to Hiroshima. In the Hiroshima Peace Memorial Museum, I was impressed with the efforts of how to tell the future generations about the historical experience of the atomic bomb. I felt a strong feeling against nuclear weapons.

“Experience is the best teacher,” I felt that. I also felt that we need to make even more efforts (such as nuclear nonproliferation) so that the international community would become one and we could benefit from the peaceful use of nuclear technology.

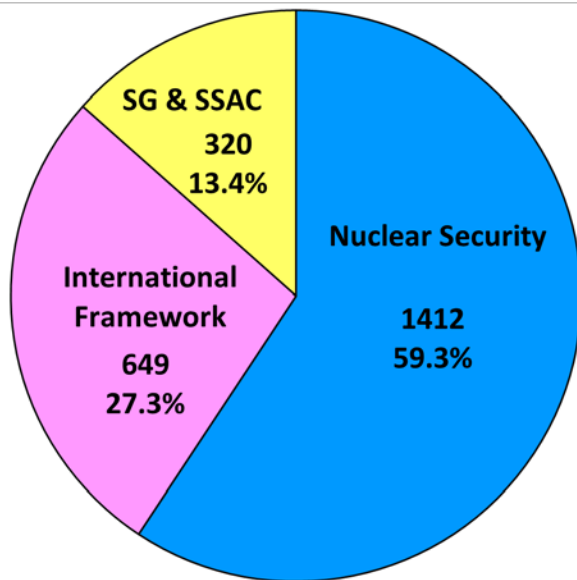


## 3.5 Distribution of Course Participants

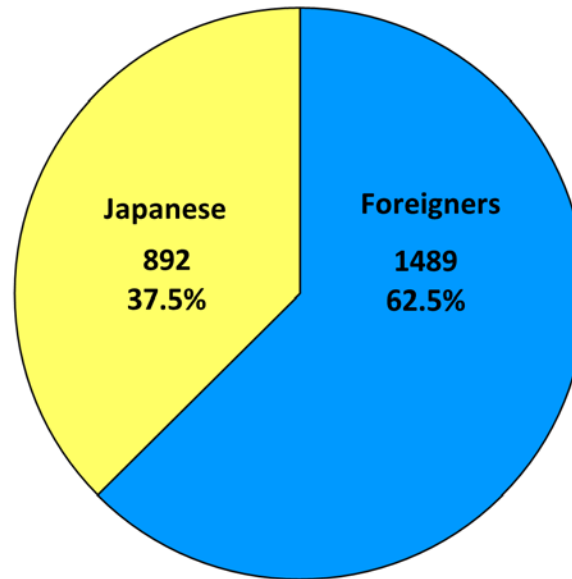
### Activity Results of 2011-August 2015

Total 2381 participants in 86 courses  
(53 countries, 3 international organizations)

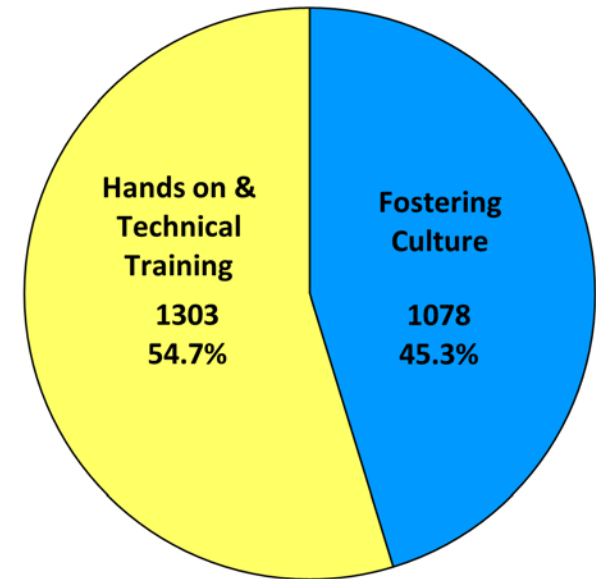
course topic



nationality



course style



# 3.6 Regional Collaboration and Harmonization

IAEA

**INSEN**  
International Nuclear  
Security Education Network

**NSSCs**  
International Network for  
Nuclear Security Training &  
Support Centers

- ❑ Information exchange on each training course and curriculum
- ❑ Exchange of lecturers
- ❑ Joint training and outreach
- ❑ Joint curriculum development
- ❑ Sharing training materials

**Asia Regional Frameworks**

**ISCN** (JAPAN) in active  
Integrated Support Center for  
Nuclear NP & NS

**INSA** (ROK) in active  
International Nuclear Security Academy

**SNSTC** (China) 2015 4Q  
State Nuclear Security Technology Center

**CBRN CoE South East Asia of EC-JRC**  
(in Phillipine)

**APSN** (Asia Pacific Safeguards Network)

**FNCA**  
(Forum for Nuclear Cooperation in Asia)

**Other COEs**

# Thank you for your attention.

Please visit our website!

[http://www.jaea.go.jp/04/iscn/index\\_en.html](http://www.jaea.go.jp/04/iscn/index_en.html)



The screenshot shows the homepage of the Integrated Support Center for Nuclear Nonproliferation and Nuclear Security (ISCN). The page features a blue header with the ISCN logo and navigation links: Home, About us, News, Activities, Events, Resources, Links, and Contact. Below the header is a large blue banner with the ISCN logo and the text "Integrated Support Center for Nuclear Nonproliferation and Nuclear Security". The main content area includes an "Information" section with a link to "The 2014 International Forum on Peaceful Use of Nuclear Energy, Nuclear Non-Proliferation and Nuclear Security - Future direction toward promoting non-proliferation and the ideal method of developing human resources using Centers of Excellence (COEs) following the New Strategic Energy Plan -" and a "Welcome to ISCN" section with a paragraph about the center's reform and a link to "For policy research, technology development (except for the measurement and detection of nuclear material), CTBT and other former STNM's activities, please click here!". The footer contains contact information and a copyright notice for the Japan Atomic Energy Agency.



**Integrated Support Center  
for Nuclear Nonproliferation and  
Nuclear Security**

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