

# East & Southeast Asia Programs

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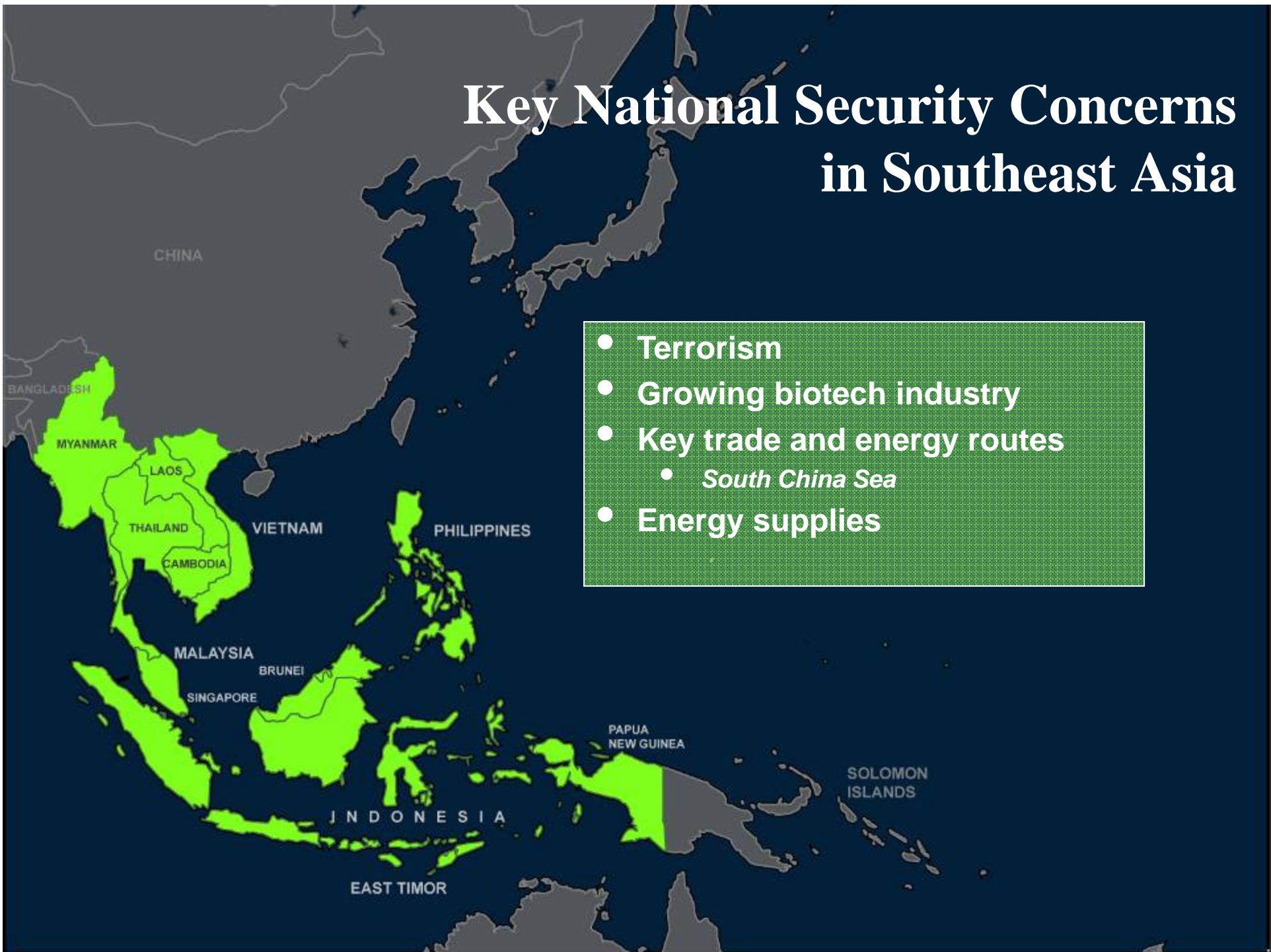
# Key National Security Concerns in East Asia

- Democratic Peoples Republic of Korea (DPRK) nuclear program
- Growth in nuclear power and nuclear fuel cycle activities
- Tensions on Korean peninsula and across Taiwan strait
- China's emergence as economic and military power



# Key National Security Concerns in Southeast Asia

- Terrorism
- Growing biotech industry
- Key trade and energy routes
  - *South China Sea*
- Energy supplies





# Current Program Focus

- **Reduce proliferation risks of expanding civilian nuclear energy**
  - Confidence building
  - Transparency
  - Regional/Global fuel-cycle supply & demand
  - Nuclear waste management
- **Regional Cooperation on Peaceful Uses of Nuclear Technology**
  - Nuclear Energy & Nonproliferation workshops (NE&N)
  - East Asia Forum on Radioactive Waste Management (EAFORM)
- **US-China-Taiwan engagement**
  - Nuclear Materials Management
    - SNF storage & disposal, information management, technology demonstrations
  - Visiting Scholar Program
  - China-US PUNT (Peaceful Uses of Nuclear Technology)



- **Korea peninsula nuclear security**
  - Cooperative Agreements
    - KAERI, KRC
- **Southeast Asia**
  - Infrastructure and Human-capacity building
  - CSCAP/WMD Expert Group





# Program Objectives

**Discourage the spread of enrichment and reprocessing technologies**

**Encourage advanced safeguards & physical protection**

- technologies and approaches

**Develop sustainable infrastructures that support nonproliferation objectives**

**Emphasize Regional Approaches**

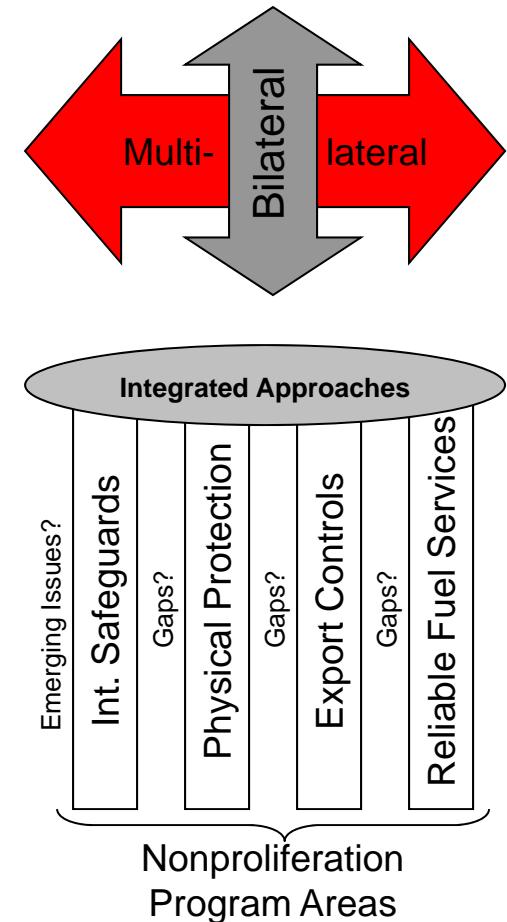
- Bi-lateral & multi-lateral

**Promote Regional Leadership**

**Identify Gaps and Emerging Issues**

**Promote integrated, complementary approaches**

- Leverage existing programs





# Annual Nuclear Energy and Nonproliferation Workshop (NEN)



- Facilitates technical collaborations and information
  - Promotes bi- and multi-lateral cooperation to help implement nonproliferation objectives
- Workshop sessions:
  - Safeguards
  - Physical protection
  - Fuel-cycle needs
  - Spent-fuel management
  - Infrastructure development
  - Multi-national approaches
- Held annually since 2005 in S. Korea
  - 7<sup>th</sup> workshop to be held in Amman, Jordan, Sept. 2011
    - First outside Korea
- Participants from countries with or considering nuclear-energy programs.
  - Representative from national laboratories, universities, and other technical institutions



# Taiwan Collaborations

## SNF Dry Storage Information Management

- Dry Storage Facility at Chinshan NPP
  - Information & authentication and encryption

## Spent Fuel Management Strategy Analysis Tool

- Develop Taiwan-specific analyses
  - Long-term planning: 50 – 100 years



## Geological Repository Sciences

- Performance assessment

## Technology Transfer for Radioactive Waste Disposal

- Facilitate communications between US and Taiwan Waste Facilities



# Regional Conferences

## Center for Security Cooperation in the Asia Pacific (CSCAP)

- WMD Expert Group
  - Biannual meetings
- Track-II
  - Input to ASEAN Regional Forum

DRAFT

**Handbook on Preventing the Proliferation of  
Weapons of Mass Destruction in the Asia-Pacific  
Draft Copy**

Council for Security Cooperation in the Asia Pacific  
WMD Study Group

Available online at: <http://www.cscap.org>.

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## East Asia Forum on Radioactive Waste Management (EAFORM)

- Biannual conferences





# NE Asia Nuclear Transparency

Japan, China, Taiwan, Russia, and South Korea cooperate to increase transparency in radiological safety & nonproliferation

- Facilitated by Sandia through NucTrans website



## Airborne radiation monitoring

**Transparency Project**

**Technologies for Transparency**

**Participants**

**Current Events**

**Reliance**

**Contact Us**

**Current Data**

**Transparency in the ASIA PACIFIC**

**Cooperation in Airborne Radiation Monitoring**

Daily Radiation Safety Data in the Asia Pacific

KEPCO  
KINS  
TEPCO  
JNC  
RMC

NEWNET

Radiation Safety Information:

- Japan Nuclear Cycle Development Institute
- U.S. Environmental Protection Agency

Radioactive Emissions - Annual Reports (Japan)

Gamma Emissions - measured at the exhaust stack  
Legal Monitor - measured at the secondary coolant release point

- Tokai Electric
- Japan Atomic
- Kansai Electric
- Shikoku Electric

Document Date

**Nuclear Transparency - Netscape**

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Bookmarks Location http://www.cmc.sandia.gov/Nuc\_Trans/Topcooperationnra.htm

What's Related

Transparency Project

Nuclear Experts Group

Transparency Technologies

Transparency Data

Language Support

Go to Related Sites

Search this site

Transparency in the ASIA PACIFIC

Cooperation in Airborne Radiation Monitoring

Daily Radiation Safety Data in the Asia Pacific

KEPCO  
KINS  
TEPCO  
JNC  
RMC

NEWNET

位圖

**Taiwan Radiation Monitoring Center (RMC)**

Daily Radiation Data: May 10 to May 11, 2000

**Northern Region**

偵測站名	偵測結果
石門	0.051 - 0.053
石崩山	0.056 - 0.058
茂林社區	0.045 - 0.048
淡水	0.059 - 0.061
板橋	0.062 - 0.063
陽明山	0.055 - 0.056
石崩一廠	0.061 - 0.065
石崩二廠	0.063 - 0.065
新店	0.067 - 0.07
新店	0.047 - 0.048
大鵬	0.054 - 0.057
大坪	0.053 - 0.054
萬里	0.065 - 0.067
基隆	0.066 - 0.068
內湖	0.058 - 0.059
淡水	0.065 - 0.067
宜蘭	0.063 - 0.064

**Southern Region**

偵測站名	偵測結果
恆春	0.067 - 0.069
後壁湖	0.055 - 0.057
大光	0.05 - 0.053
墾丁	0.057 - 0.065
淡水	0.052 - 0.054
高樹	0.061 - 0.063
屏東	0.057 - 0.06
台東	0.06 - 0.062

監測中心  
核能設施  
監測站  
監測點

Links to Taiwan Radiation Monitoring Center

Chinese English

Click on a site in the table to view the last two weeks data as a graph.

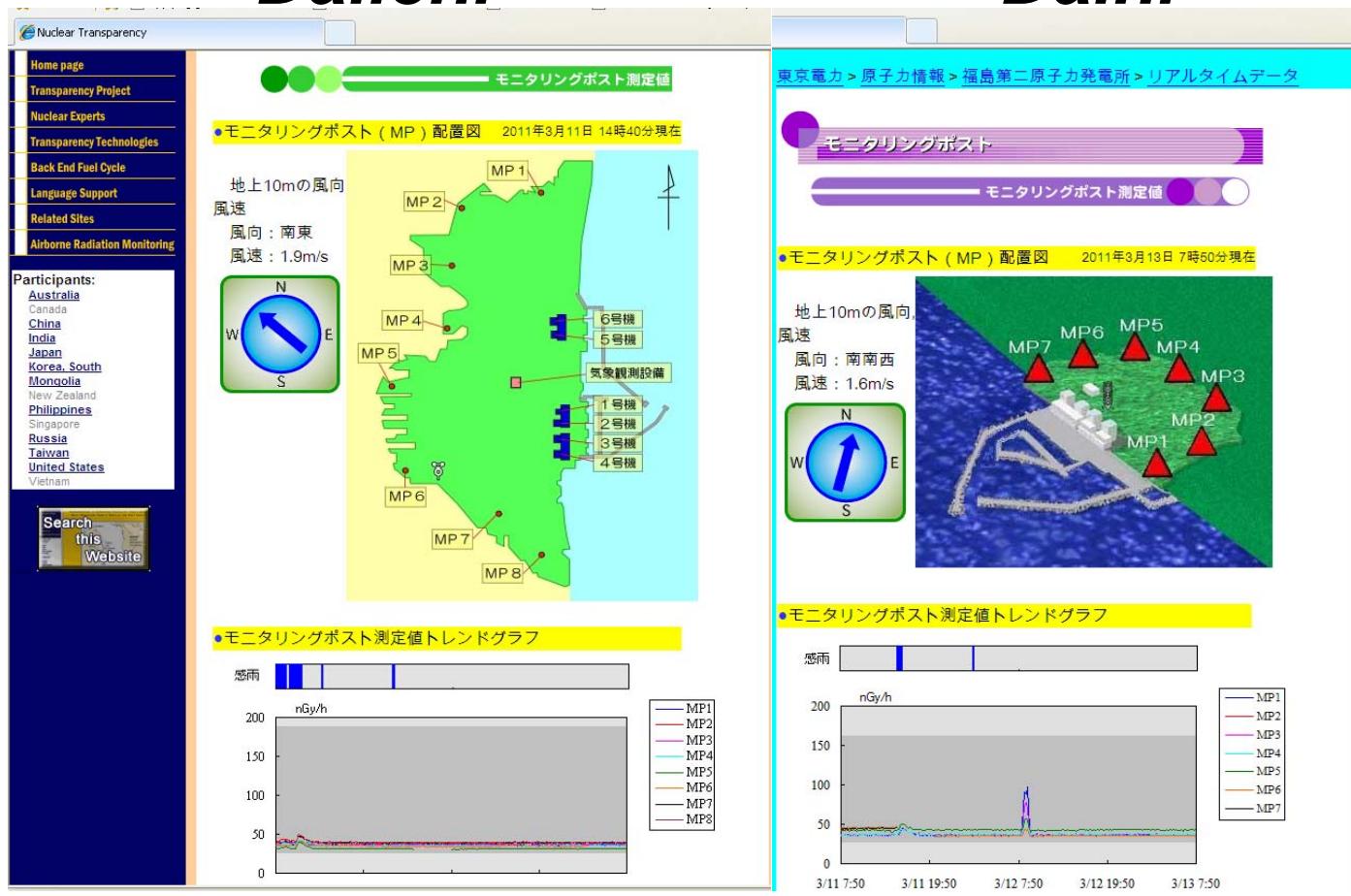
Units: microSieverts/hour

單位:微西弗/小時

[www.nuctrans.org](http://www.nuctrans.org)

# NucTrans Website

## Fukushima (March 2011) *Daiichi*      *Daini*





# Summary

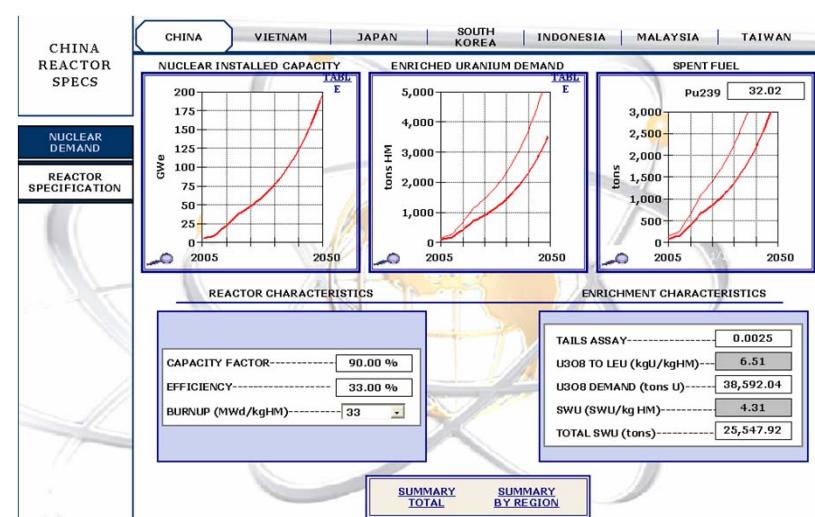
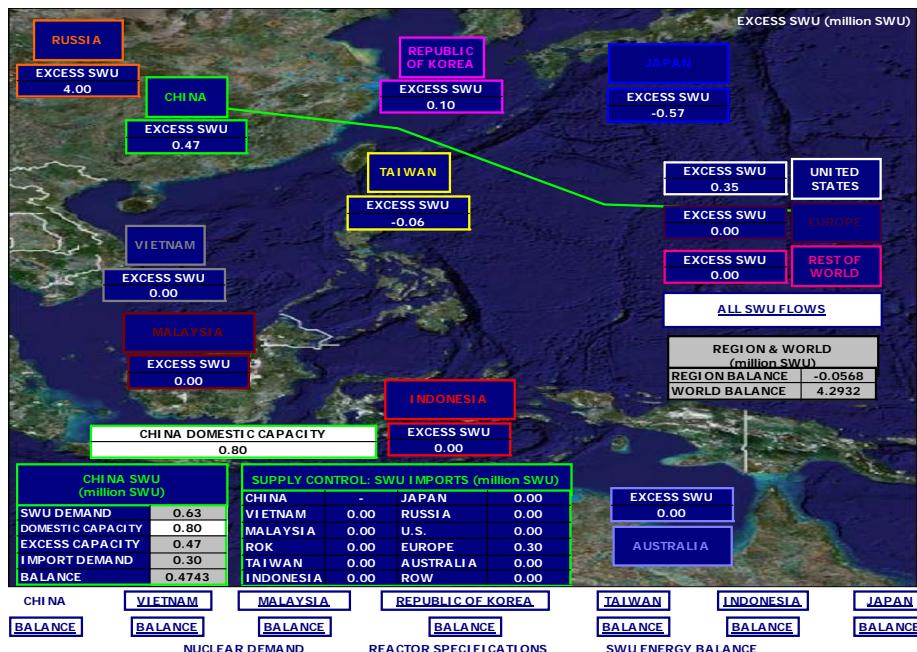
- Technology cooperation can help enable international cooperation on regional security interests and concerns
- Promote cooperative, multinational approaches
- Addressing fuel-cycle supply & demand to help reduce proliferation risks
- Encourage cooperation on nuclear waste management strategies

## Additional Slides



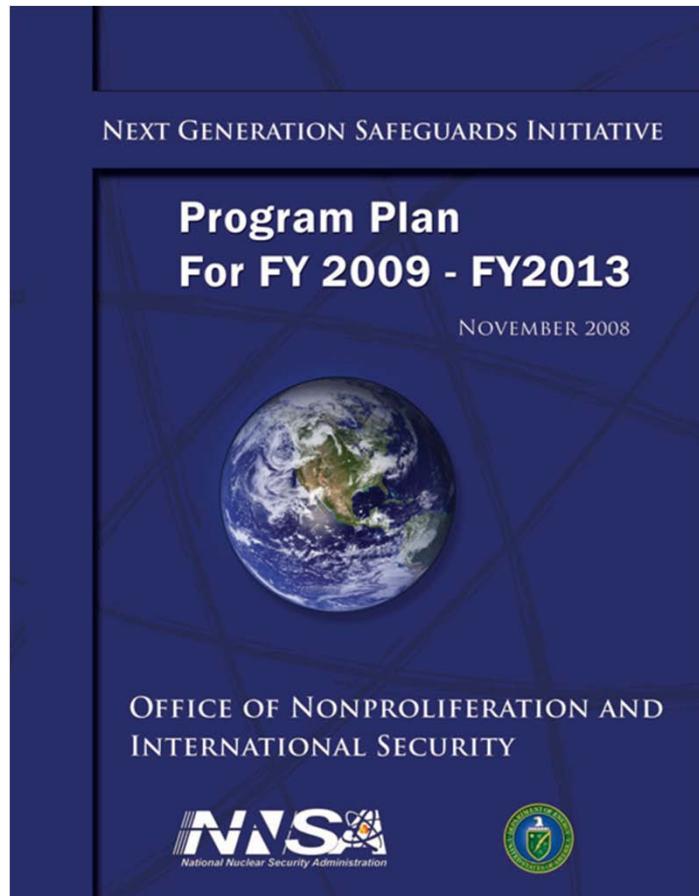
# Fuel Cycle Services Needs Estimator (FCSNE)

- Modeling tool for estimating enrichment needs and spent fuel arising from:
  - Growth of nuclear power
  - Average reactor-fleet operating characteristics
  - Global enrichment capacity
- Facilitates discussions about future needs, planning, and alternative approaches





# Next Generation Safeguards Initiative (NGSI)

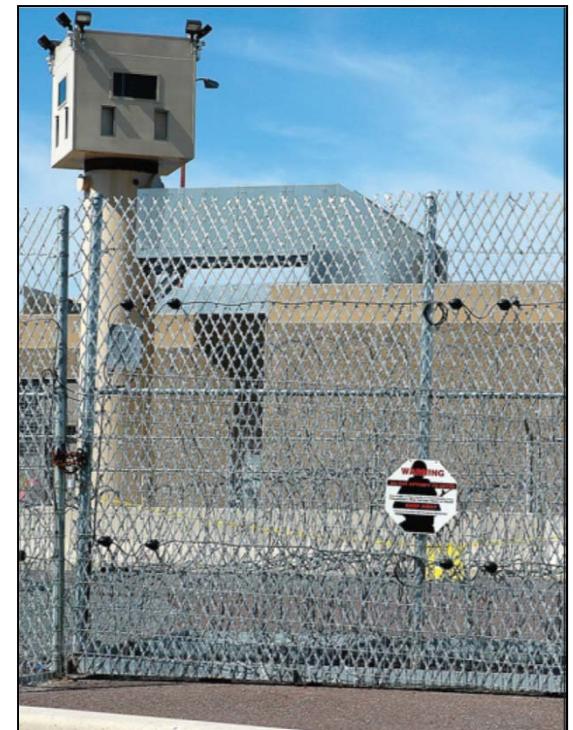


- Annual session at NEN workshops
- Develop and demonstrate advanced safeguards concepts and approaches
- Develop advanced safeguards technologies
  - Improve effectiveness & efficiency
  - Nuclear facilities and State level approaches
- Recruit and train young professionals
- Provide technical support to countries planning for civil nuclear power



# Physical Protection

- International Instruments for Physical Protection Of Nuclear Material and Nuclear Facilities
  - Evaluation Requirements
- Performance-Based Physical Protection
  - Tools & Methodologies
  - Design and Evaluation
- Performance testing program
  - Purpose for and aspects of performance testing
- Design Basis Threat
  - Definition, Value, Examples
- Best practices
  - International experiences





# Long-Term Spent-Fuel Storage



## Cooperation on SNF Storage

- **Long-term disposition strategies**
  - Challenges include spent fuel take-back concepts
    - Extended, long-term interim storage
    - Transportation
- **Proliferation of storage sites reduces security and transparency**
- **Spent-fuel storage is the *sine qua non* of fuel cycle service regimes**
- **Regional cooperation on technical facility issues can facilitate acceptance of future regional solutions**

## Technical Collaboration & Standards Development

- **Safety**
- **Security**
- **Safeguards**
- **Transportation**
- **Transparency and environmental monitoring**
- **Fuel-acceptance criteria and materials characterization**