



Japan's Policy & JAEA's Approach to Nuclear Nonproliferation: Efforts to Cooperate with Asian Countries

*The International Forum on Nuclear Nonproliferation and
Peaceful Use of Nuclear Energy in the Asia Region*

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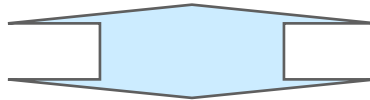
Outlines

- 1. Japan's Policy for Nuclear Nonproliferation**
- 2. Japan's Approach to Ensure Nuclear Nonproliferation**
- 3. JAEA's Efforts on Nuclear Nonproliferation**
- 4. JAEA's Cooperation with Asian Countries**
- 5. Approach for Cooperation with Asian Countries**
- 6. Conclusion**

(1) Nuclear Non-proliferation Policy in the Framework

◆ **Promote International Approaches**

- (a) Nuclear Disarmament: Work toward early CTBT entry into force, Call for the initiation of FMCT negotiations
- (b) Nuclear Nonproliferation: Promote the universal application of CSA and AP; Maintain an active involvement in NSG discussions and PSI activities
- (c) The Potential for Nuclear Nonproliferation: Actively explore new approaches, including Multilateral Nuclear Approaches (MNA).



(2) The Need for International Cooperation

- ◆ To promote the understanding of the importance to strictly observe nuclear nonproliferation in order to enjoy benefits from the peaceful use of nuclear energy

1. Japan's Policy for Nuclear Nonproliferation (2/5)

Reference: Round-table Conference on the Vision for Nuclear Energy Policy for Global Environment Protection and Security of Energy Supply, Atomic Energy Commission March 13, 2008.

Principal Action 1:

- ✓ To Build a Consensus on the Necessity of Expanding Peaceful Use of Nuclear Energy
- ✓ To Develop International Frameworks for this Expansion

- (1) To build a global consensus that the expansion of the peaceful use of nuclear energy, while ensuring nuclear nonproliferation, safety and security, is an essential measure against global warming
- (2) To explore measures to encourage investment in establishing the nuclear energy infrastructure, such as the construction of nuclear power plants and other related activities for countries trying to promote the peaceful use of nuclear energy while ensuring nuclear nonproliferation, safety, and security

1. Japan's Policy for Nuclear Nonproliferation (3/5)

Reference: Round-table Conference on the Vision for Nuclear Energy Policy for Global Environment Protection and Security of Energy Supply, Atomic Energy Commission March 13, 2008.

Principal Action 2:

✓ To Promote International Approaches to Enhance the Nuclear Non-proliferation Regime

- (1) Strengthen IAEA's human and financial resources for sufficient IAEA's monitoring functions for the obligations under international treaties including the NPT and the Convention on Nuclear Safety
- (2) Enhance cooperation towards further advancement of the activities of the IAEA and the OECD/NEA in formulating relevant technical standards and recommendations
- (3) Contribute to reinforcing the IAEA safeguards, while actively promoting the universalization of the IAEA Additional Protocol as well as actively participating and contributing to multinational discussions about the development of nuclear fuel supply assurance mechanisms

1. Japan's Policy for Nuclear Nonproliferation (4/5)

Forum for Nuclear Cooperation in Asia (FNCA)

Joint Communiqué on the Peaceful Use of Nuclear Energy for Sustainable Development

December 18, 2007

We, the Heads of delegation of countries participating in the **FNCA**, **decided** to:

3. Make further efforts to ensure nuclear non-proliferation, through strengthening cooperation with the IAEA in the area of non-proliferation and working towards concluding safeguards agreements and associated additional protocols,

.....

5. Make further efforts to ensure nuclear security, through cooperating with the IAEA and the international community and actively participating in international efforts such as the IAEA Nuclear Security Seminars, and

1. Japan's Policy for Nuclear Nonproliferation (5/5)

Responsibility of the states that promote peaceful use of nuclear energy

✓ **3S are essential for the global expansion of peaceful use of nuclear energy**

➤ **Safeguards** (& nuclear non-proliferation)

- ✓ Comprehensive Safeguards Agreement
- ✓ Additional Protocol

➤ **Security** (physical protection and nuclear security)

- ✓ Countermeasures against nuclear terrorism

➤ **Safety** (nuclear safety)

- ✓ Regulatory framework
- ✓ Strengthening of measures against earthquakes

◆ **The importance of the 3S was mentioned in the Joint Statement by Energy Ministers of G8, the PRC, India and ROK in Aomori, Japan on June 2008**

2. Japan's Approach to Ensure Nuclear Nonproliferation (1/2)

Chronology of Safeguards in Japan

1976 *NPT Ratification*

1977 *Comprehensive Safeguards Agreement*

1999 *Additional Protocol*

Jun. 2004 IAEA conclusion of “Japan’s non diversion of nuclear materials and non undeclared nuclear materials and activities

Sep. 2004 *Integrated Safeguards* started in Japan as the first non-nuclear-weapon state with full-scale nuclear fuel cycle



“I am pleased to note that Japan has become the first State with an advanced nuclear cycle to qualify for integrated safeguards”

Statement by IAEA Director General El Baradei to 2004 IAEA General Conference (20 September 2004)

2. Japan's Approach to Ensure Nuclear Nonproliferation (2/2)

How Japan Achieved International Credibility for Non-proliferation

Five Factors for International Confidence

1. Obvious Need for nuclear fuel cycle program

2. Manifesto for Peaceful Use of nuclear energy

3. Transparency of national nuclear energy program

4. Excellent Record of Compliance with nonproliferation norms for more than 30 years

5. Proactive Contribution to Nonproliferation

Measures to enhance nuclear non-proliferation

Combination of measures to fill the gap of NPT regime and the establishment of new framework

- Enhancement and improvement of efficiency of IAEA safeguards:
 - ✓ Universal adherence of Additional protocol
 - ✓ Application of Integrated safeguards
 - ✓ R&D for advanced (next-generation) safeguards technology
- R&D for effective and efficient measures for strengthened nuclear security and physical protection
- Development of proliferation resistant nuclear technology as well as of methodology to evaluate proliferation resistance (GNEP, GIF, INPRO and cooperation with DOE)
- Further progress of nuclear disarmament and technology development to support it (Verification measures of CTBT, FMCT, Cooperation on Plutonium disposition in Russia)
- Cooperation with and support to Asian states – Transparency, Confidence building, Nuclear non-proliferation, Safeguards and Nuclear Security)
- Enhancement of control of sensitive nuclear technology and export control
- Active Contribution to the establishment of a new framework such as multilateral control of nuclear fuel cycle and mechanism of assurance of fuel supply

3. JAEA's Efforts on Nuclear Nonproliferation (1/10)

Goals and Roles of Nuclear Nonproliferation Science & Technology Center (NPSTC) of JAEA

- ◆ ***JAEA promotes the Peaceful Use of Nuclear Energy and Become a Core Center Supporting Nuclear Nonproliferation Policy Planning Through Following Activities;***
 - ✓ ***Accurate nuclear material management***
 - ✓ ***Producing world acknowledged results including nuclear nonproliferation technology development, support for the nuclear nonproliferation policy planning and nuclear disarmament and human resource development, gathering technological potentialities within JAEA***
 - ✓ ***Disseminating knowledge on the compatibility between the peaceful use of nuclear energy and nuclear nonproliferation despite of the instability of nuclear nonproliferation regime***
 - ✓ ***Obtaining worldwide high expectation and reliability on nuclear nonproliferation from domestic and foreign organizations including administrative bodies***

3. JAEA's Efforts on Nuclear Nonproliferation (2/10)

JAEA Philosophy for Nuclear Nonproliferation

- ◆ *In order to maintain energy security as well as to protect global environment;*
 - JAEA develops various technologies based on its long-standing nuclear research and development knowledge and expertise.
 - JAEA contributes the compatibility between the peaceful use of nuclear energy and nuclear nonproliferation while establishing close cooperation with domestic and international organizations.

3. JAEA's Efforts on Nuclear Nonproliferation (3/10)

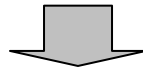
JAEA's Cooperation with Asian Countries

Stages

Basic Research

**Deployment of NPP
Evolverment of
nuclear research**

**Expansion of NPP
Advanced nuclear
research**



Types

fields

Cooperation in accordance with the needs of each country

**MEXT Nuclear Researchers
Exchange Program**

FNCA, IAEA/RCA, IAEA/ANSN

**3S (Safeguards ,
Security and Safety)**

**Mutually beneficial cooperation
through agreements**

Wide-ranging areas

**Participation in multilateral
projects**

3. JAEA's Efforts on Nuclear Nonproliferation (4/10)

Current status of JAEA's cooperation with Asian states

- Cooperation through bilateral agreements

JAEA has signed agreements or joint research contracts with South Korea, China, Indonesia Thailand, Malaysia and Vietnam

- Cooperation in the framework of government-funded projects

○MEXT Nuclear Researchers Exchange program

Participants States: Bangladesh, China, Indonesia, Malaysia, Philippines, Sri Lanka, Thailand and Viet Nam

○Program for the training of candidates for the lecturers of nuclear energy

○Program to ensure nuclear safety in Asian countries

- Multilateral Cooperation

○Forum for Nuclear Cooperation in Asia (FNCA)

Participants States: Australia, Bangladesh, China, Indonesia, Japan, South Korea, Malaysia, Philippines, Thailand and Viet Nam

JAEA personnel serves as leaders of 4 projects

○Cooperation in the framework of IAEA/Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA)

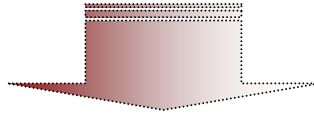
3. JAEA's Efforts on Nuclear Nonproliferation (5/10)

Asian Study

“The Survey on Nuclear Nonproliferation Situations in Asia”

2006 Fiscal Year:

- ◆ Survey research on nuclear nonproliferation situations in Indonesia and Vietnam



2007 Fiscal Year:

- ◆ Theme 1: Case Studies of Indonesia and Vietnam
 - To examine issues in establishing and enhancing nuclear nonproliferation framework in Indonesia and Vietnam
 - To identify areas for cooperation from technical perspective that Japanese government can contribute to enhancing the nuclear nonproliferation framework in Indonesia and Vietnam
- ◆ Theme 2: Survey Research on Thailand
 - To research and examine nuclear nonproliferation policies, framework, and situations in Thailand

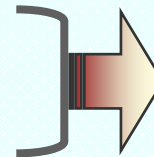
3. JAEA's Efforts on Nuclear Nonproliferation (6/10)

The Status of Nuclear Non-proliferation in Asian developing countries

✓ Based on the research study for Thailand, Indonesia, and Vietnam

◆ **Common areas as challenges**

- ☐ Legal framework
- ☐ Regulatory framework / capabilities
- ☐ Nuclear security / Physical protections



***Need International
Assistance***

◆ **Different priorities and varied levels in understanding and advancement**

☐ Thailand

- To establish the independent authority of its regulatory body

☐ Indonesia

- To establish and strengthen the regulatory system for nuclear energy applications

☐ Vietnam

- To establish legislations accommodating nuclear energy use

3. JAEA's Efforts on Nuclear Nonproliferation (7/10)

“Expert Meeting on Peaceful Use of Nuclear Energy & Nonproliferation” (JAEA & VARANSAC (Vietnam))

◆ Cooperation between Two Organizations

- ❑ Vietnam Agency for Radiation & Nuclear Safety and Control (VARANSAC)
- ❑ Nuclear Nonproliferation Science & Technology Center (NPSTC) of the JAEA

◆ Overview of the Meeting

- ❑ Place/Date: Hanoi, Vietnam/Mar. 18-19, 2008
- ❑ Participants: VARANSAC, Vietnam Atomic Energy Commission (VAEC), Ministry of Science and Technology (MOST), Others
- ❑ Totally 63 participants (50 Vietnamese participants, 2 IAEA experts, 1 NMCC speaker, 10 NPSTC speakers and secretariats)

◆ Objectives

- ❑ To establish and deepen the understanding of a necessary nuclear nonproliferation system associated with the nuclear energy use
- ❑ To clarify challenges in establishing the nuclear nonproliferation infrastructure in Vietnam and to develop a cooperative framework suitable to address Vietnam's needs

◆ Contents

- ❑ Overview of nuclear energy and nonproliferation policies
- ❑ The International Framework of Nuclear Nonproliferation: Export controls (NSG, etc.), PP, & Nuclear security
- ❑ Safeguards Systems in details

3. JAEA's Efforts on Nuclear Nonproliferation (8/10)

The Evaluation of the Expert Meeting

◆ Evaluation Methods

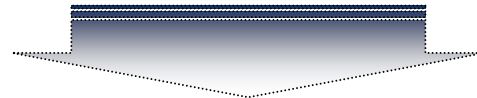
- ❑ Questionnaires to the participants of the Expert Meeting
- ❑ Evaluation meeting with VARANSAC on Mar. 20, 2008.

◆ Evaluation Overview

- ❑ Exemplified Japan's experience in developing the legal system to ensure its nuclear nonproliferation commitments as a potential guideline for Vietnam
- ❑ Clarified issues and challenges for Vietnam to establish its system for nuclear nonproliferation commitments
- ❑ Better understood the need for cooperation programs suited for the scope and level of Vietnam's nuclear development
- ❑ Identified future direction of our cooperation with VARANSAC

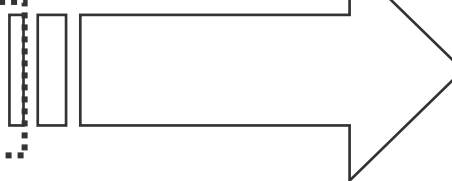
◆ Challenges for Vietnam's Nonproliferation Efforts

- ❑ Legal system build-up for nuclear nonproliferation applications
- ❑ National system build-up toward the ratification of the IAEA Additional Protocol
- ❑ Capacity & capability building for data collection & management for SSAC operation



To Build Up

**Close & Regular
Working-level Meetings**



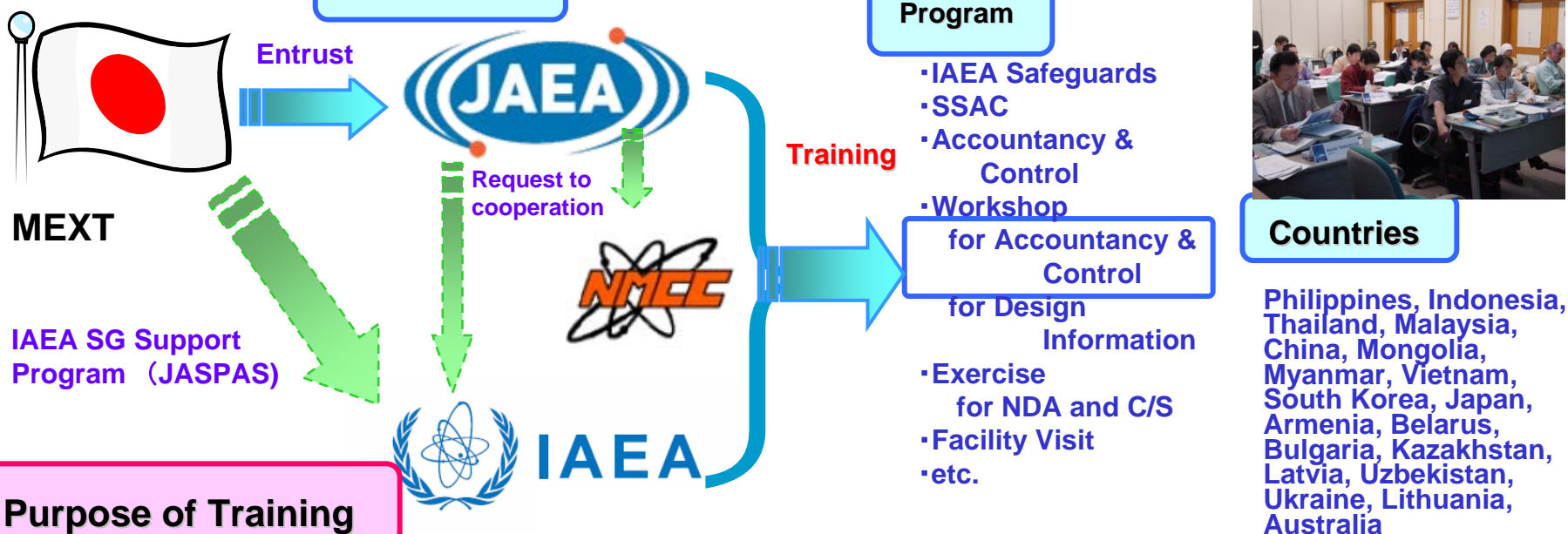
**•Legal & Regulatory System
•Data collection &
management Capability**

3. JAEA's Efforts on Nuclear Nonproliferation (9/10)

JAEA Safeguards Training Course (1/2)

As a contribution to the peaceful use of nuclear energy in Asia, Pacific and former Soviet Union, JAEA regularly provides participants from such countries with Safeguards Training Course to initiate, operate and maintain the Safeguards and Material Control System to meet the IAEA Safeguards.

Structure



Purpose of Training

- To ensure and promote peaceful use of nuclear energy in Asia, Pacific and former Soviet Union
- To contribute to IAEA Safeguards implementation with improvement of knowledge for Safeguards and Accountancy Control
- To promote exchange of safeguards related information in the region.

3. JAEA's Efforts on Nuclear Nonproliferation (10/10)

Recent activities	Schedule
8 th Safeguards Training Course	Nov. 29- Dec. 16, 2004
9 th Safeguards Training Course	Nov. 28- Dec. 15, 2005
6 th Regional Training Course on State System of accounting for and control of nuclear material	Nov. 13-24, 2006

JAEA Safeguards Training Course (2/2)



Trainees during Lecture

C/S Workshop



2008 Safeguards Training Course(4/4)

Course Plan

Place : JAEA, Nuclear Science Research Institute, Tokai, JAPAN

Date : 20-31 Oct. 2008 (2 weeks)

Participant : About 10 participants, mainly from Asian countries

Instructor : From JAEA, MEXT, NMCC and IAEA

Objective : To provide appropriate training in institutional and operational concepts and relevant technology in the areas of nuclear material accountancy and control system for participants.

5. Approach for Cooperation with Asian countries (1/2)

(Objective)

Effective measures can and should be taken to minimize the danger of the proliferation of nuclear weapons without jeopardizing energy supplies or the development of nuclear energy for peaceful purposes.

This objective can only be achieved through continued international co-operation.

(Specific Approach to Asian countries)

To provide Japan's experience in the field of nuclear nonproliferation (safeguards, state system of account for and control of nuclear material, physical protection, export control, etc)

5. Approach for Cooperation with Asian countries (2/2)

(Primary Elements of the Assistance Programme)

- Interaction with individual States
- Interface between legal and technical issues
- Multi-faceted approach to transfer knowledge and know-how:
 - workshops,
 - training,
 - human resources
 - assistance in drafting legislation,
 - development of reference material for the assessment and drafting of national nuclear legislation

**In providing support to Asian countries, tailor-made approach with due account of the diverse need of each country could be effective. Hanoi Expert Group Meeting in March 2008 might be a good basis for the similar attempts in other countries.*

(Future step)

To explore the bilateral cooperation agreement and the possibility of creating a regional nuclear nonproliferation framework

6. Conclusion

- **Nuclear nonproliferation is prerequisite to the peaceful use of nuclear energy**
- **To comply with nuclear nonproliferation norms and to take adequate nuclear security measures will help ensure international confidence in nuclear energy development and use**
- **It is very important to have a framework to share each experience and mutual collaboration for nuclear nonproliferation**
- **Japan is an active participant in nonproliferation and supports cultivating a nonproliferation culture in Asia**
- **JAEA's experience could be useful to other countries. We are willing to cooperate and share our experiences with Asian countries.**

References

Nuclear Non-proliferation Policy Research Projects

Evaluation of Japan's track record of nuclear non-proliferation as a model potentially applicable to other states

Nuclear Nonproliferation, Transparency and Confidence-building in Peaceful Nuclear Use in Asia

<Scope>

- Evaluate how Japan has taken measures to ensure nuclear non-proliferation for the peaceful use of nuclear energy, especially pursuit of nuclear fuel cycle programs
- Identify any gaps of the current system and issues to be addressed

<Scope>

- Identify the issues to be solved for the enhancement of transparency and confidence in the peaceful nuclear use in Japan
- Recommend concrete measures for the cooperation with Asian countries in the field of nuclear non-proliferation

<Presentation>

February 2006 Oarai Symposium

“International Confidence to Japanese Nuclear Activities”

July 2006 INMM

“Evaluation of Japanese Cooperation to Safeguards Implementation as One of Best Practices in terms of Openness and Transparency”

<Presentation>

February 2006 Oarai Symposium

“Transparency of Nuclear Activity in Asia”

July 2006 INMM

“Transparency of Peaceful Use of Nuclear Energy in East Asia”

<Other related activities>

18-19 March, 2008

JAEA-VARANSAC (Vietnam Agency for Radiation and Nuclear Safety) Expert Group Meeting on Peaceful Use of Nuclear Energy & Nonproliferation

<Final Report>

Expected soon

How Japan achieved international credibility for nonproliferation in its nuclear fuel cycle

Five Factors for International Confidence

1. Manifesto for Peaceful Use of nuclear energy
2. Obvious Need for nuclear fuel cycle program
3. Transparency of national nuclear energy program
4. Excellent Record of Compliance with nonproliferation norms for more than 30 years
5. Proactive Contribution to Nonproliferation

1. Manifesto for Peaceful Use of Nuclear Energy

■ “Peaceful Purposes Only” Doctrine

was laid down in Atomic Energy Basic Law, 1955

Article II (Basic Doctrines)

“The research, development and utilization of atomic energy shall be limited to peaceful purposes,”

■ “Three Non-Nuclear Principles”

was proclaimed as Policy Guideline, 1967

“not possessing, not producing and not permitting the introduction of nuclear weapons into Japan”

2. Obvious Need for Nuclear Fuel Cycle Program in Japan

- JAPAN: a densely populated, highly industrialized and yet energy-scarce island country
 - Most of energy supplied from abroad
 - Large-scale nuclear power program (55LWRs, 49GWe)
 - Virtually no domestic uranium resource
 - Very limited land availability for waste disposal

- Nuclear fuel cycle:
 - Provides self-sustaining energy system
 - Minimizes radioactive waste

3. Transparency of National Nuclear Energy Program

- “Made Public” Doctrine was laid down in Atomic Energy Basic Law (1955)

*Article II (Basic Doctrines)

“The Research, development and utilization of atomic energy shall be limited to peaceful purposes.... the results therefore shall be made public to contribute to international cooperation.”

- Long-term program for Research, Development and utilization of Nuclear Energy was formulated by Atomic Energy Commission
 - Open document for national nuclear energy policy & program
 - Assure “Peaceful purposes only” Doctrine
 - Open process for revising L-T Program (revised every 5 years)
 - Present program called “Framework for Nuclear Energy Policy” was formulated in October 2005.
- Transparency of national budgetary system

4. Excellent Record of Compliance with nonproliferation norms

- Ratified NPT in 1976
- Excellent record of compliance with Comprehensive Safeguards since 1977
- (subject of more than one quarter of IAEA safeguards)
- Ratified Additional Protocol in 1999 and faithfully implemented thereafter
- Strictly adhered to bilateral agreements since 1955
- Adopted NSG & Zanger Committee requirements in export control laws & regulations
- Incorporated enhanced PP requirements into domestic laws & regulations

5. Proactive Contribution to Nonproliferation

- Enhanced proliferation resistance in reprocessing plants
- **Cooperated with IAEA** in developing reliable safeguards methodologies to be applied to nuclear fuel cycle:
JASPAS, LASCAR.
- Participates in CTBT Monitoring System
- Supports Russia for W-Pu disposition

Revised Nuclear Reactor Regulation Law (Enhancement of PP)

○ Enhancement of Physical Protection Regime

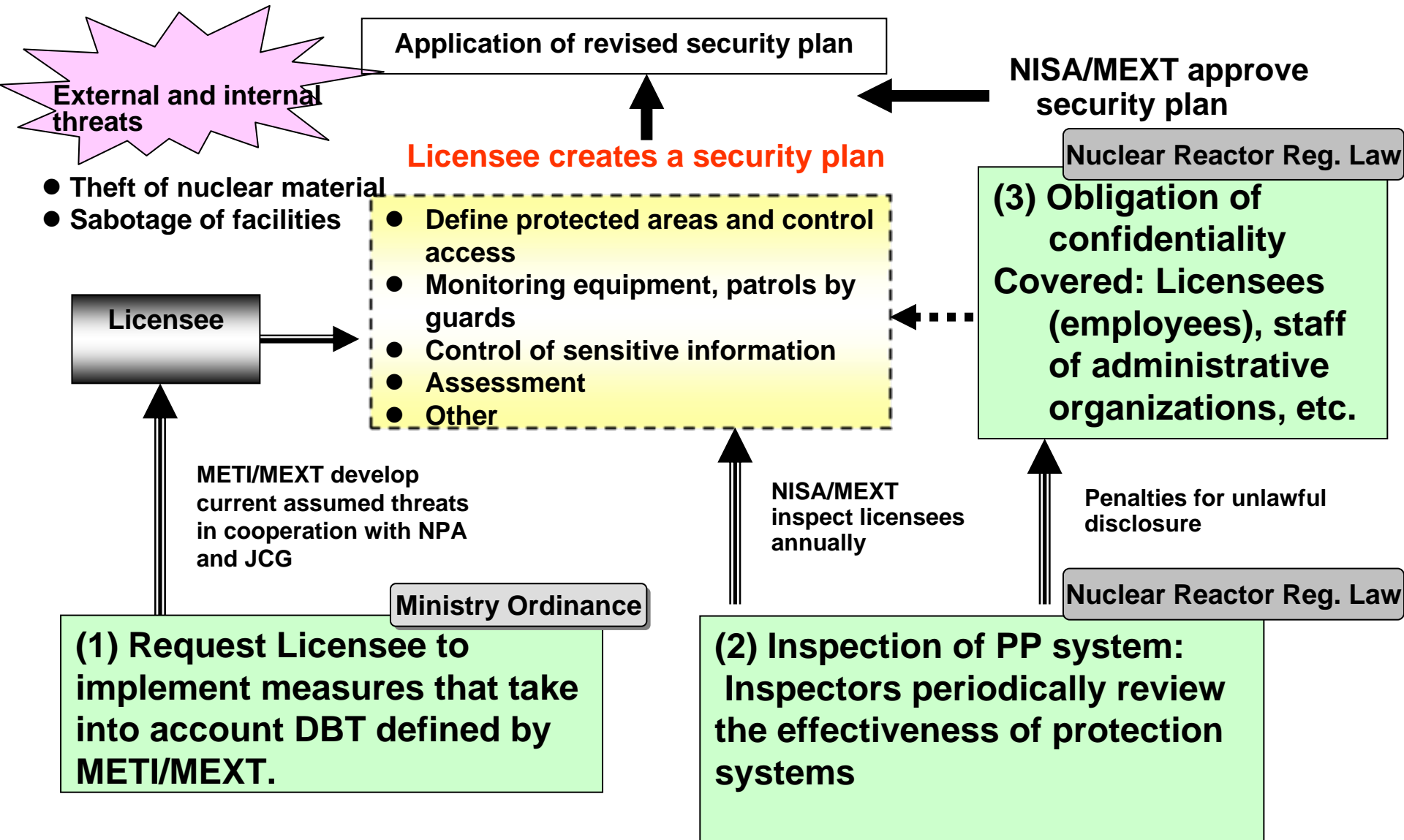
- Protection measures according to the IAEA Recommendations (INFCIRC/225/Rev.4)
- Enhancement of PP measures reflecting growing international terrorism (9/11/2001)

Law for Revised Nuclear Reactor Regulation Law
【Promulgation: May 20, 2005, Effect: Dec 1, 2005】

(Point of Amendment)

- (1) **Clarification of Design Basis Threat (DBT)**
- (2) **Introduction of PP Inspection**
- (3) **Duty to keep secret**

(7) Framework of Enhancements to the Physical Protection Regime in Japan



Strengthening of PP measure of JAEA by Revised Nuclear Reactor Regulation Law

Cost required for the strengthening measure

	2007 Fiscal Year (Approved Budget)	
General account	350 million yen (53.9 billion VND*)	Guard increase of the personnel is included.
Special account	1,390 million yen (214 billion VND*)	

*1yen=154VND
(2008/03/03)

