



Japan MEXT's Initiative to Promote Exchange of Nuclear Scientists and Researchers

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1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

- (1) Nuclear Researchers Exchange Program
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- (3) Instructor Training Program
- (4) Nuclear Safety Experts Dispatch Program

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(1) Nuclear Researchers Exchange Program-1/3

1) Invitation to research institutes

(Host research institutes)

Japan Atomic Energy Agency (JAEA), National Institute for Radiological Science (NIRS), National Institute of Advanced Industrial Science and Technology (AIST), etc

2) Invitation to national universities

(Host universities)

The University of Tokyo, Tokyo Institute of Technology, etc

3) Dispatch of experts

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(1) The Nuclear Researchers Exchange Program-2/3

Features:

1) Invitation to research institutes

Period: 3~12 months

Size: 40 persons/year

Course Outline: OJT, Research, Experiment

2) Invitation to national universities

Period: 6~12 months

Size: 10 persons/year

Course Outline: Research

3) Dispatch of experts

Period: ~2 months

Size: 15 persons/year

Course Outline: Dispatch Japanese experts on request

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(1) The Nuclear Researchers Exchange Program-3/3

Fields proposed:

- 1) Operation, Design and Utilization of Research and Test Reactors
- 2) Nuclear Safety Engineering
- 3) Reactor Engineering / Reactor Chemistry / Nuclear Material Science
- 4) Nuclear Physics and Radiological Analysis
- 5) Radiation Chemistry and Processing
- 6) Environmental Radiation Safety, Radiation Measurement and Radiation Protection
- 7) Treatment and Disposal of Radioactive Wastes
- 8) Medical and Biological Application of Radiation and Radioisotopes
- 9) Neutron Science
- 10) Others

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(2) International Seminar on Nuclear Safety-1/4

Courses:

- 1) Administrative Management Course
(Host institute) Nuclear Safety Research Association (NSRA)

- 2) Safety Analysis Course
(Host institute) NSRA

- 3) Plant Safety Course
(Host institute) JAEA

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(2) International Seminar on Nuclear Safety-2/4

1) Administrative Management Course

Period: 3 Weeks

Size: 8 persons/year

Course Outline:

(Target Participant) Government staff or supervisory employee at national/public research institute, who is responsible for nuclear policy

(Content) Nuclear development and safety administration, public information, safety measures, radioactive waste issues and radiation application

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(2) International Seminar on Nuclear Safety-3/4

2) Safety Analysis Course

Period: 3 Weeks

Size: 8 persons/year

Course Outline:

(Target Participant) Technical experts of safety analysis or safety evaluations of nuclear facilities

(Content) Nuclear safety administration and regulation, safety design, safety analysis and evaluation of nuclear facilities, probabilistic safety analysis method and risk evaluation

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(2) International Seminar on Nuclear Safety-4/4

3) Plant Safety Course

Period: 3 Weeks

Size: 8 persons/year

Course Outline:

(Target Participant) Managers or technical experts in the field of operation, maintenance and development of nuclear power plant

(Content) Configuration of power plant system, , safety design, review and assessment, maintenance, inspection

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(3) Instructor Training Program

Period: 4~6 Weeks

Size: 2~4 persons/year/country

Contents: Lectures, exercises and experiments on the following subjects

- 1) Operation, Design and Protection
- 2) Emergency Preparedness
- 3) Application of Nuclear Technique in Industry and Environment
- 4) Reactor Engineering
- 5) Nuclear Safety/Safeguard (Jointly hosted with IAEA every four years)

Objective: Training participants to become instructors

Host institute: JAEA

1. MEXT's Contribution to HRD of Nuclear Research & Development in Asia

(4) Nuclear Safety Experts Dispatch Program

Contents:

1) Long-term Dispatch

Period: A few months

Size: 1~2 persons/year/country

2) Short-term Technical Meetings/Lectures

Period: 1Week

Size: 4 persons/year/country

Objective:

1) To deepen/enhance expertise through technical discussions among experts in a government, institutes and universities

2) To contribute to building nuclear safety bases in each country

2. Highlights of MEXT HRD Program Results

(1) Asian Nuclear Researchers invited to Japan by MEXT program

	Total	Since
Nuclear Researchers Exchange Program (Invitation)	1,406	Year 1985
International Seminar on Nuclear Safety	473	Year 1987
Instructor Training Program (Invitation)	93	Year 1996
Total	1,972	

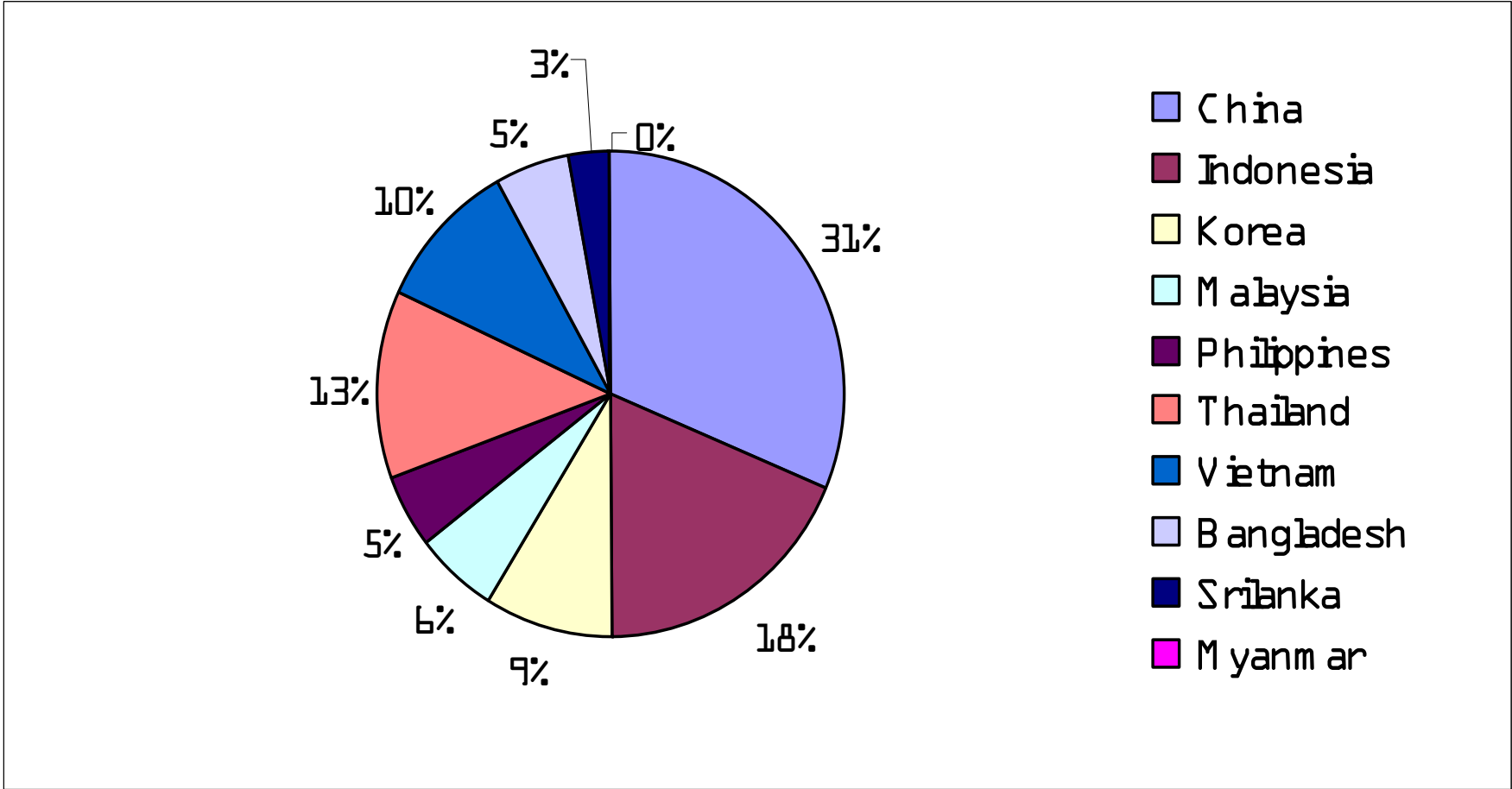
2. Highlights of MEXT HRD Program Results

(2) Japanese Nuclear Researchers Dispatched to Asian Countries by MEXT Program

	Total	Since
Nuclear Researchers Exchange Program (Dispatch)	655	Year 1985
Nuclear Safety Dispatching Program	193	Year 1993
Instructor Training Program (Dispatch)	237	Year 1997
Total	1,085	

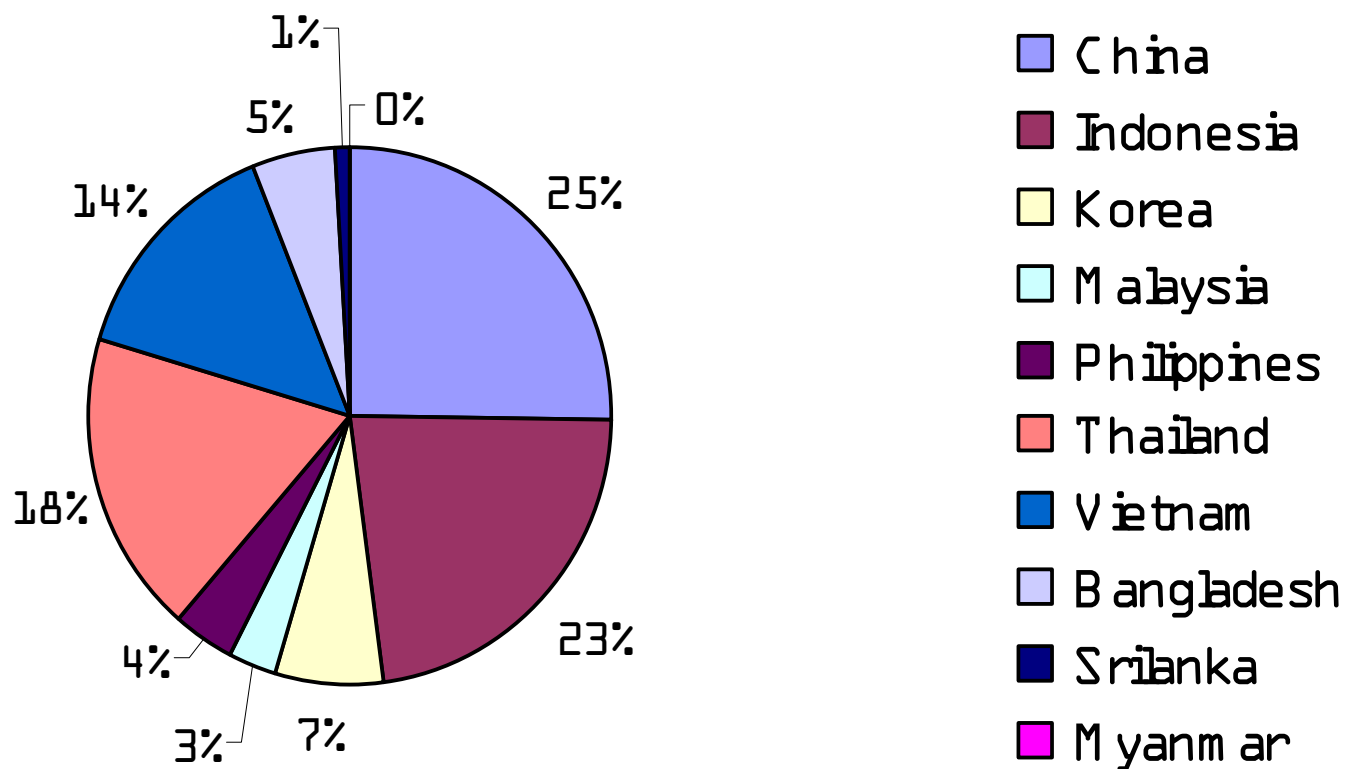
2. Highlights of MEXT HRD Program Results

(3) Share of Each Country (Invitation)



2. Highlights of MEXT HRD Program Results

(4) Share of Each Country (Dispatch)



3. ANTEP (Asian Nuclear Training and Education Program)

Objective

To support national Human Resources Development of FNCA countries (□) by sharing information on both needs and availabilities for exchanging nuclear researchers

(□) Australia, Bangladesh, China, Indonesia, Korea, Malaysia, Philippines, Thailand, Vietnam, Japan

Major fields

- Nuclear science and engineering for energy and power applications
- Radiation and radioisotope application for industry, health care, and agriculture

3. ANTEP (Asian Nuclear Training and Education Program)

Concept of ANTEP (NETEORK)



Needs from a member country are matched by available HRD programs of another member country through information exchanges and coordination by ANTEP

3. ANTEP (Asian Nuclear Training and Education Program)

Room for Improvement

- To achieve more matching, more detailed technical descriptions should be provided from both need and host side
- To meet more needs, involvement of training courses that do not pay travel expenses would be considered.

4. Conclusion

- MEXT offers various kind of HRD programs in nuclear field for Asian countries.
- ANTEP, a new intermediate system developed by Japan's initiative, will contribute to more matching of needs among Asian countries.
- ANTEP makes MEXT HRD programs more effective.
- MEXT is committed to support human resources development in nuclear field in Asia.

4. Conclusion

But...

- Budget for these programs is shrinking.
- With ageing population and maturing of nuclear industries, human resources base in nuclear field is shrinking.
- Demands for scientist and engineers in nuclear field remains high worldwide.
- Coordination with other initiatives is easy to say, but difficult to implement.

5. Topics

1. Nuclear Human Resources Development Program

I. Supports for educational activities

1. Improvement of basic education and research in nuclear fields

2 Supports for wider internships

3. More educational opportunities including lectures, nuclear facility tours targeted on both:

- Students who are to decide their majors
- Students majoring in non-nuclear fields

4. Improvement of core curriculum of nuclear education

II. Supports for research activities in fundamental nuclear technologies

5. Topics

2. Global Nuclear Research and Education Initiative

University of Tokyo awarded Global COE funding

[Objective]

- New stage of Nuclear Utilization harmonized with Society
- Combination of both “Frontier of nuclear energy and radiation application” and “Nuclear-Sociology”
- Human resource development which contribute to evolution of nuclear technology and its global expansion

5. Topics

3. Nuclear Human Resources Development Council

[Objective]

- Specify problems, discuss, provide counter measures for mid/long term issues regarding nuclear human resources development

[Members]

- Manufacturers
- Utilities
- Government
- Universities
- Research Institutes