



文部科学省

MINISTRY OF EDUCATION,
CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY-JAPAN

Activities of MEXT for HRD and R&D on Future Nuclear Energy

Hiroki TAKAYA

Director,

*Advanced Reactor Research Promotion and Nuclear Human Resource Development Division,
Research and Development Bureau,
Ministry of Education, Culture, Sports, Science and Technology (MEXT)*



MEXT

MINISTRY OF EDUCATION, CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY-JAPAN

Activities of MEXT on Nuclear Energy

HRD

- Lecture, Training



R&D

- Nuclear science and engineering research
- R&D for decommissioning of Fukushima Daiichi NPP, TEPCO
- Nuclear safety research
- R&D on nuclear fuel cycle and high-level radioactive waste disposal



Japan Material Testing
Reactor (JMTR)



Nuclear Safety Research
Reactor (NSRR)



Collaborative Laboratories for Advanced
Decommissioning Science (CLADS)

Changes in the number of departments and majors of nuclear engineering at universities

In 1984

Universities: 10 Departments

(Quota: approx. 460 students)

Graduate schools: 11 Majors

(Quota: approx. 230 students)

In 2015

Universities: 3 Departments

(Quota: approx. 100 students)

Graduate schools: 9 Majors

(Quota: approx. 210 students)



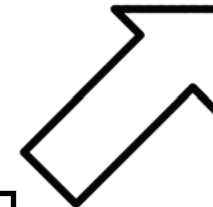
In 2004

Universities: 1 Departments

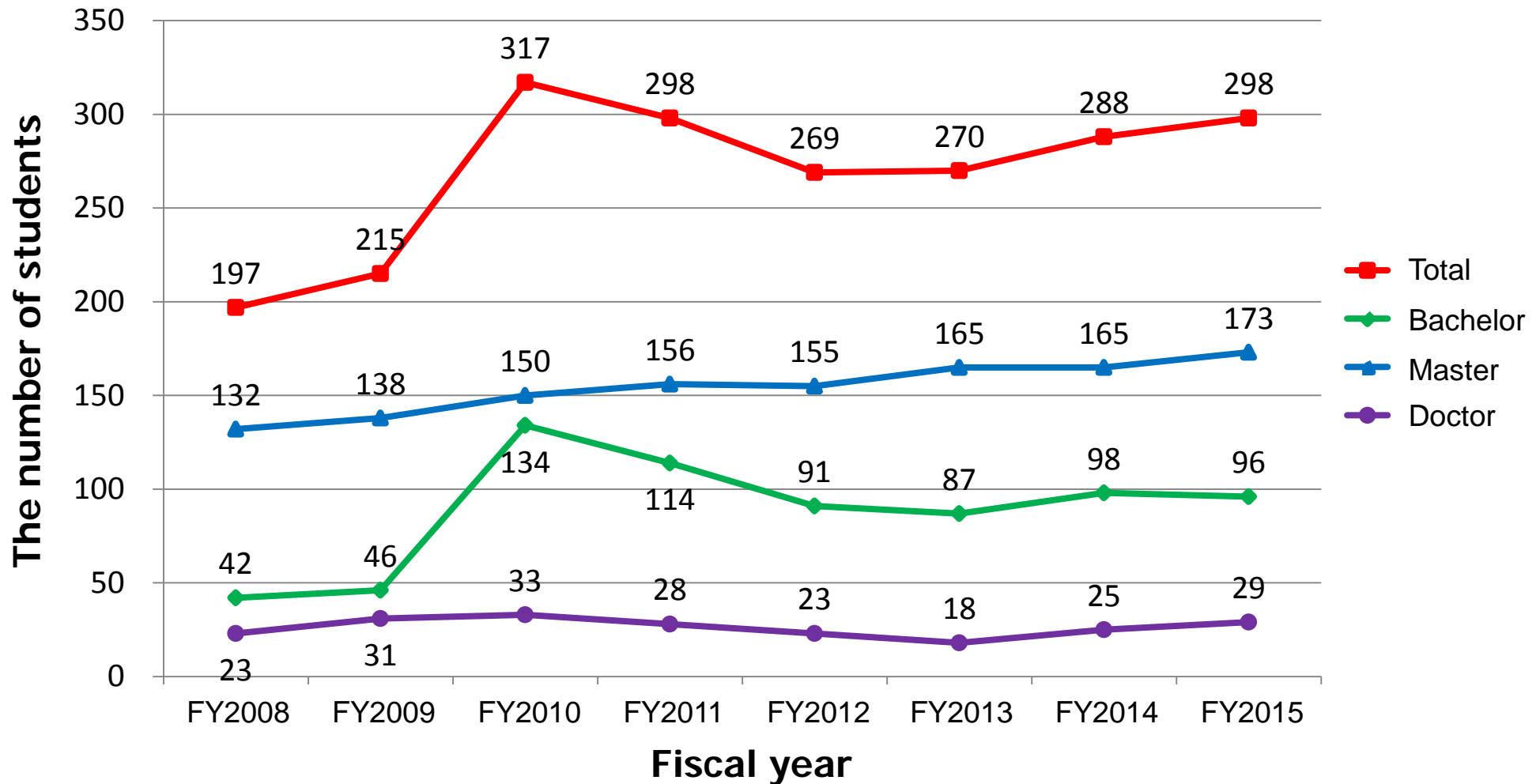
(Quota: approx. 40 students)

Graduate schools: 5 Majors

(Quota: approx. 110 students)



Changes in the number of students entering departments and majors of nuclear engineering at universities



Research Reactors related to MEXT

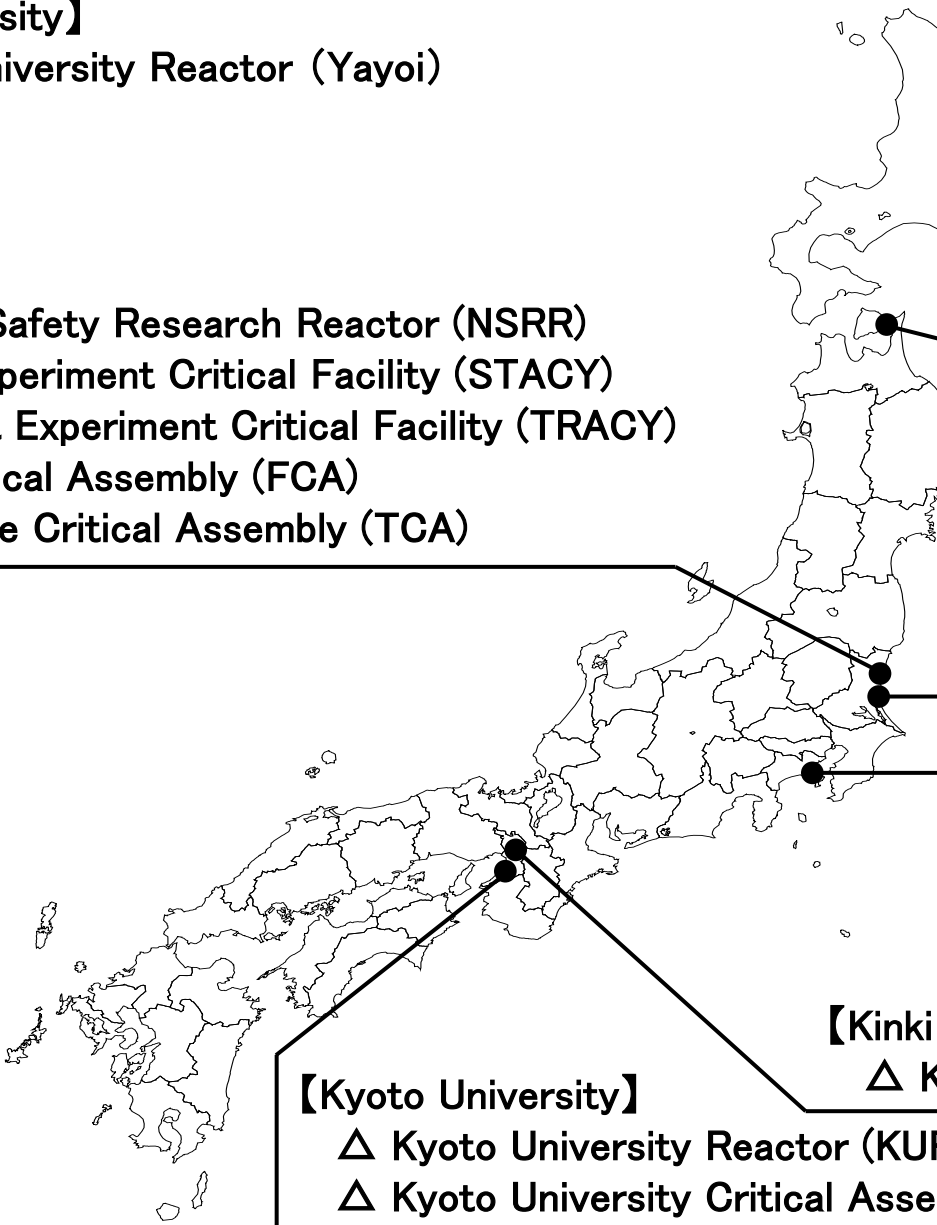
【Tokyo University】

- × Tokyo University Reactor (Yayoi)

【JAEA】

- × JRR-2
- △ JRR-3
- △ JRR-4
- △ Nuclear Safety Research Reactor (NSRR)
- △ Static Experiment Critical Facility (STACY)
- △ Transient Experiment Critical Facility (TRACY)
- △ Fast Critical Assembly (FCA)
- △ Tank-type Critical Assembly (TCA)

○ Research Reactor in operation
△ Research Reactor in halt
× Research Reactor in shutdown



【JAEA】

- × Nuclear-powered ship (Mutsu)

【JAEA】

- △ Japan Material Testing Reactor (JMTR)
- △ High Temperature engineering Test Reactor (HTTR)
- △ Experimental Fast Reactor (Joyo)
- × Deuterium Critical Assembly (DCA)

【Tokyo city University】

- × Tokyo City University Reactor

【Rikkyo University】

- × Rikkyo University Reactor

【Kinki University】

- △ Kinki University Reactor (UTR-KINKI)

【Kyoto University】

- △ Kyoto University Reactor (KUR)
- △ Kyoto University Critical Assembly (KUCA)

Global Nuclear HRD Initiative

MEXT supports HRD activities carried out through collaboration among universities, private companies, independent administrative corporations, etc. FY2010-

Implementation period **3 years**

Budget **20 million JPY / Problem**

Target institutions **Universities, Private companies,
Independent administrative corporations, etc.**

Training at Kinki University



Lecture through TV systems
(Tokyo Institute of Technology)



the Center of World Intelligence Project for Nuclear S&T and HRD

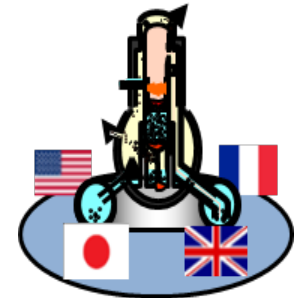
MEXT promotes

1. R&D with domestic/international researchers including scientists in the field of non-Nuclear S&T
2. HRD through the Industry-Academia-Government cooperation on the basis of "Acceleration Plan of Reactor Decommissioning R&D for Fukushima Daiichi Nuclear Power Station (F1), TEPCO" (June 2014, MEXT)

Target institutions

**Universities, Private companies,
Independent administrative corporations, etc.**

1. The program of Basic & Strategic Research of Nuclear S&T
 - International cooperation program
 - Strategic research program

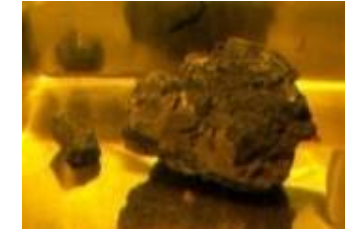


2. The program of HRD for decommissioning



Fuel Debris Handling and Analysis Division

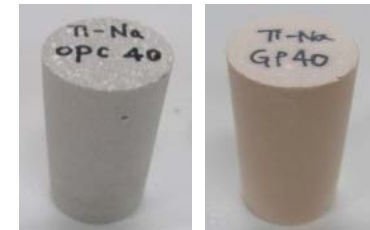
- R&D on various analytical technologies for decommissioning



TMI-2 debris sample

Waste Management Division

- R&D on treatment and disposal for solid radioactive wastes



Example of simulated conditioned waste

Severe Accident Propagation Behavior Evaluation Division

- R&D for investigation on Fission Product chemistry, release/transportation, sorption
- R&D on Core melt/relocation behavior

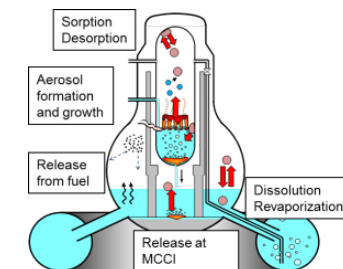


Image of reactor after the accident

Nuclear HRD Working Group

MEXT sets “Nuclear HRD Working Group” in 2015 and discusses following topics.

- **Present circumstances surrounding nuclear human resources**
- **Training professionals on nuclear engineering in universities**
- **Nuclear human resources demanded by nuclear industries**
- **Roles of research facilities for HRD** etc.

Members

Akira YAMAGUCHI Professor, The University of Tokyo

Mitsuru UESAKA Professor, The University of Tokyo

and 11 other professionals from Universities, Private companies, JAEA, etc.