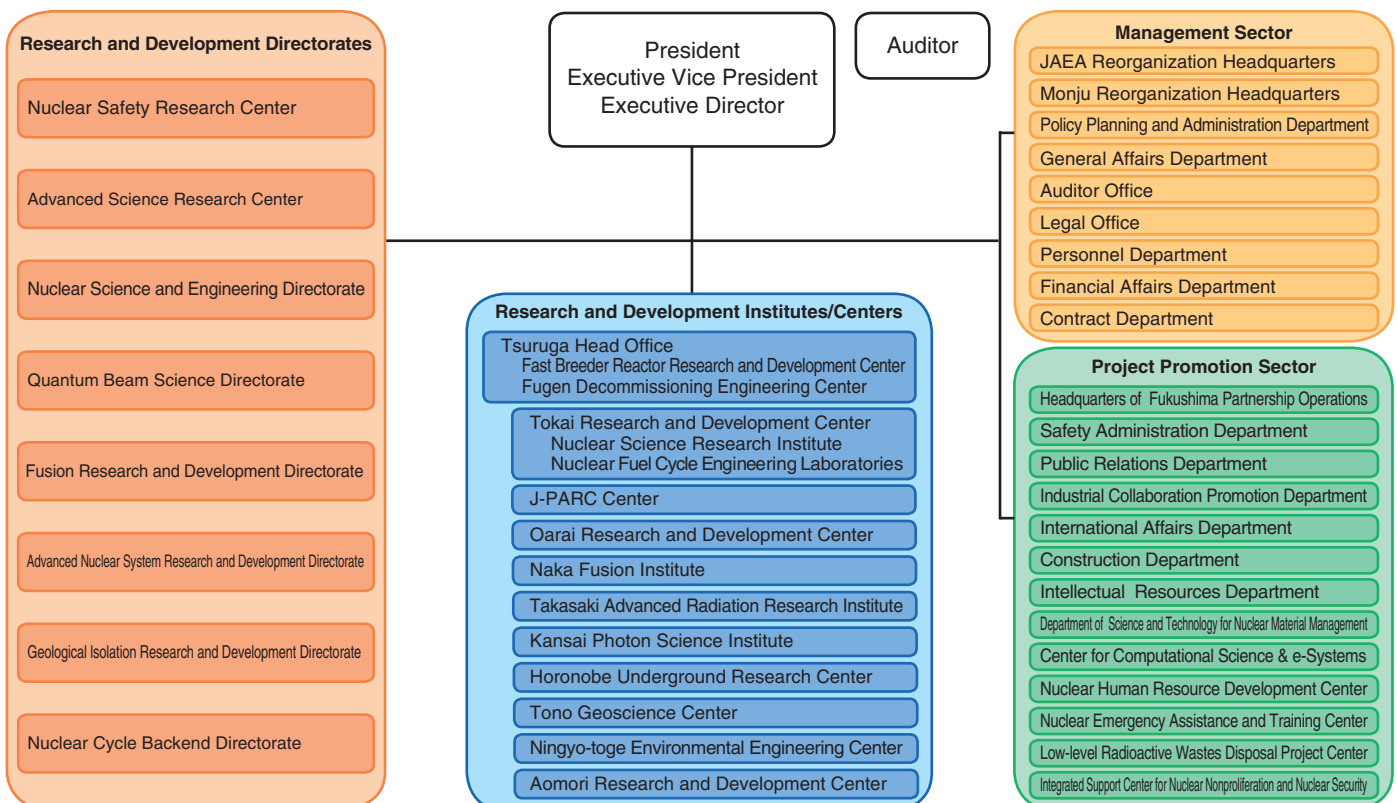


About This Publication and the Outline of Organization of JAEA

This publication introduces the latest accomplishments of research and development (R&D) in the JAEA, which are chaptered by area of study. Each chapter corresponds to the activities of one R&D Directorate. As shown in the organization chart and the map below, the R&D Directorates perform their activities through R&D Institutes and Centers, which are located widely in Japan as the sites for R&D. Some R&D directorates are located at one site, others are at two or more. The following outlines the activities undertaken by R&D Directorates and R&D Institutes and Centers.

1. The **Headquarters of Fukushima Partnership Operations** is engaged in R&D to recover from the accident at the Tokyo Electric Power Company, Incorporated Fukushima Daiichi Nuclear Power Station. Partnership operations for plant restoration have set up “Special Teams for Technologies Development” at three centers of JAEA: the Nuclear Science Research Institute, the Nuclear Fuel Cycle Engineering Laboratories, and the Oarai Research and Development Center. These centers conduct R&D to restore the interior of the nuclear power plant. Fukushima Environmental Safety Center in the Fukushima prefecture is conducting R&D concerning decontamination technologies to restore the environment, develop outreach activities concerning radiation, and study measurement of radioactive materials in the human body by whole-body counters. In addition, Nuclear Plant Decommissioning Safety Research Establishment has been established, and we are working on the analysis and research of radioactive materials and development of remote controlled robot and its demonstration plant.
2. The **Advanced Nuclear System Research and Development Directorate** is carrying out R&D aimed at commercializing the fast breeder reactor (FBR) and its nuclear fuel cycle. The R&D of plant technology using the prototype fast breeder reactor “MONJU” is being undertaken at the Tsuruga Head Office (Fast Breeder Reactor Research and Development Center), R&D for innovative FBR technology is being conducted at the Oarai Research and Development Center, and R&D on manufacturing plutonium fuel and reprocessing spent FBR fuel is being conducted at the Tokai Research and Development Center (Nuclear Fuel Cycle Engineering Laboratories).
3. The **Geological Isolation Research and Development Directorate** is carrying out multidisciplinary R&D aimed at improving the reliability of geological isolation of high-level radioactive waste in Japan. A particular focus involves establishing techniques for investigating the deep geological environment through research on crystalline rocks at the Tono Geoscience Center and research on sedimentary rocks at the Horonobe Underground Research Center. At the Tokai Research and Development Center, the focus is on improving technologies for designing disposal facilities and safety assessment. In addition, work has been ongoing to develop a next generation knowledge management system based on the above R&D activities.
4. The **Fusion Research and Development Directorate** is performing fusion R&D as a domestic agency of the International Thermonuclear Experimental Reactor (ITER) project and an implementing agency of the Broader Approach (BA) activities. The procurement activity of the ITER project, the upgrade of JT-60 to a superconducting machine as the BA activity, fusion plasma research, and R&D on various element technologies are carried out in the Naka Fusion Institute. Moreover, the International Fusion Energy Research Center project and the Engineering Validation and Engineering Design Activities of the International Fusion Material Irradiation Facility as the BA activity are performed mainly in the Aomori Research and Development Center.

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5. The **Quantum Beam Science Directorate** is engaged in research using neutron facilities in the Tokai Research and Development Center (Nuclear Science Research Institute) and the J-PARC Center. Work using electron beams, gamma ray, and ion beam facilities is done in the Takasaki Advanced Radiation Research Institute. Research using lasers and synchrotron radiation is performed at the Kansai Photon Science Institute.
6. The **Nuclear Safety Research Center** is in charge of safety research for supporting national nuclear safety regulatory bodies that regulate nuclear power plants, nuclear fuel cycle facilities, and radioactive waste disposal facilities. This work is done at the Tokai Research and Development Center (Nuclear Science Research Institute) and at the Tsuruga Head Office.
7. The **Advanced Science Research Center** conducts pioneering research in basic fields of nuclear power science, mainly through the Tokai Research and Development Center (Nuclear Science Research Institute) and the Takasaki Advanced Radiation Research Institute.
8. The **Nuclear Science and Engineering Directorate** is engaged in key and basic research on various elemental technologies that support the use of nuclear power. These efforts are carried out in the Tokai Research and Development Center (Nuclear Science Research Institute) and the Oarai Research and Development Center.
9. The **Nuclear Hydrogen and Heat Application Research Center** conducts R&D on technology for the use of high-temperature heat supplied from naturally safe, high-temperature, gas-cooled reactors and technology for using this heat to produce hydrogen. These studies are done in the Oarai Research and Development Center.
10. The **Nuclear Cycle Backend Directorate** develops technologies for safe and rational decommissioning of nuclear power facilities as well as measures for processing and disposing radioactive waste. This work is performed in the Tokai Research and Development Center.
11. The **Center for Computational Science & e-Systems** develops pioneering simulation technology and basic technology in computational science as well as operates and maintains computer equipment. This occurs mainly in the Tokai Research and Development Center (Nuclear Science Research Institute).
12. The **Department of Science and Technology for Nuclear Material Management** and the **Integrated Support Center for Nuclear Nonproliferation and Nuclear Security** develop technologies for nuclear nonproliferation and safeguards to ensure the peaceful use of nuclear energy. These developments are done in the Tokai Research and Development Center (Nuclear Science Research Institute) and the Techno Community Square Ricotti.
13. The **R&D Institutes and Centers**, located at 11 sites in Japan, manage and improve the performance of facilities and equipment to support the abovementioned R&D Directorates in safe and efficient R&D activities.

R&D Institutes/Centers of JAEA

