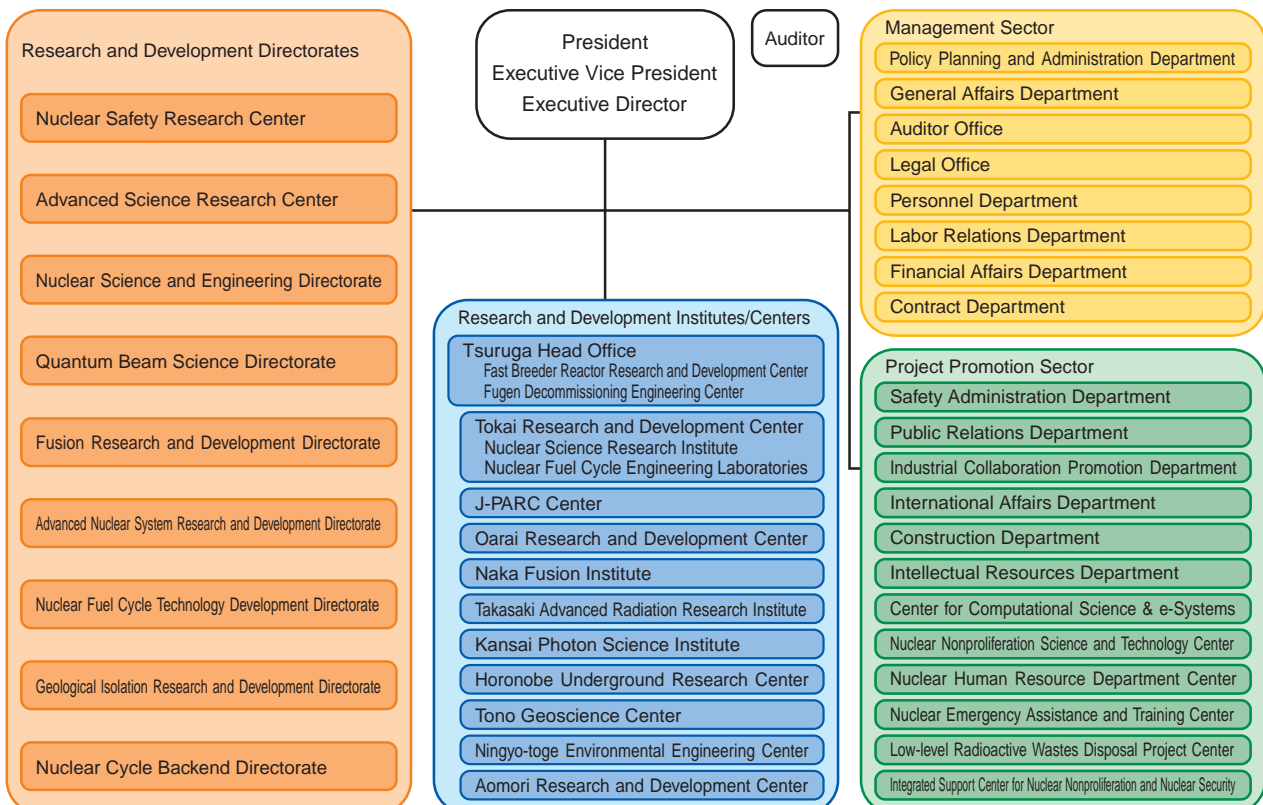


About This Publication and the Outline of Organization of JAEA

This publication aims to introduce the latest our R&D results in each field, divided into their respective chapters. The R&D results presented in each chapter, correspond to the activities of the relevant R&D Directorates. As shown in the Organization Chart, the various R&D Directorates carry out their activities through R&D Centers or Institutes. Some of these consist of only one site, while others are located two or more locations, depending on the components of their R&D activities. The R&D Centers and Institutes are located all over Japan, as shown in the map below. The following brief introductions give an outline of research undertaken by each R&D Directorate through the various R&D Centers/Institutes.

1. The **Advanced Nuclear System Research and Development Directorate** carries out R&D aimed at commercializing the fast breeder reactor (FBR) and its nuclear fuel cycle. The Tsuruga Head Office undertakes R&D using the prototype fast breeder reactor “MONJU”, the Oarai Research and Development Center conducts R&D on reactor technology using the experimental fast reactor “JOYO” and other test facilities, and the Tokai Research and Development Center (Nuclear Fuel Cycle Engineering Laboratories) conducts R&D on manufacturing plutonium fuel and reprocessing FBR fuel, among others.
2. The **Geological Isolation Research and Development Directorate** is carrying out multidisciplinary R&D aimed at improvement in reliability of geological isolation of high-level radioactive waste in Japan. A particular focus involves establishing techniques for investigating the deep geological environment through researches both at the Tono Geoscience Center in crystalline rocks and at the Horonobe Underground Research Center in sedimentary rocks. 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 on going to develop a next generation knowledge management system based on the above R&D activities.
3. The **Fusion Research and Development Directorate** operates through two research centers. One of these, the Naka Fusion Institute, takes care of Japan’s procurement as a domestic organ of the International Thermonuclear Experimental Reactor (ITER) Project. It also carries out modification planning and core plasma research on the critical plasma test device JT-60 as part of a Japan-EU collaboration and Japanese national program, as well as R&D on various element technologies. The Aomori Research and Development Center, meanwhile, is active as R&D center for fusion computation, DEMO design and R&D, and material irradiation facilities supplementary to the ITER project.
4. The **Quantum Beam Science Directorate** is engaged in research using neutron facilities in the Tokai Research and Development Center (Nuclear Science Research Institute) and J-PARC Center, research using electron beam, gamma ray, and ion beam in the Takasaki Advanced Radiation Research Institute, and research using lasers and synchrotron radiation at the Kansai Photon Science Institute.

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5. Through the Kansai Photon Science Institute, the **Photo-Medical Research Center** conducts R&D on technology for applying lasers to medical treatment, in cooperation with universities and other collaborating research institutions.
6. The **Nuclear Safety Research Center** is in charge of researching for national safety regulations on nuclear power plants, nuclear fuel cycle facilities and radioactive waste disposal facilities, among others, based in the Tokai Research and Development Center and 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 Takasaki Advanced Radiation Research Institute.
8. The **Nuclear Science and Engineering Directorate** is engaged in key and basic research on various element 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 high-temperature gas-cooled reactors and technology for hydrogen production using this heat in the Oarai Research and Development Center.
10. The **Nuclear Fuel Cycle Technology Development Directorate** is engaged in developing technology for reprocessing light water reactor spent fuel and processing radioactive waste, and transferring technology to industry, mainly in the Tokai Research and Development Center (Nuclear Fuel Cycle Engineering Laboratories).
11. The **Nuclear Cycle Backend Directorate** develops technology for safe and rational decommissioning of nuclear power facilities as well as measures for processing and disposal of radioactive waste, in the Tokai Research and Development Center.
12. The **Center for Computational Science & e-Systems** develops pioneering simulation technology and basic technology in computational science, as well as operating and maintaining computer equipment, mainly in the Tokai Research and Development Center (Nuclear Science Research Institute).
13. The **Nuclear Nonproliferation Science and Technology Center** develops technology for nuclear nonproliferation and safeguards to ensure the peaceful use of nuclear energy, in the Tokai Research and Development Center (Nuclear Science Research Institute).
14. The **R&D Centers and Institutes** located at 11 sites in Japan, manage and improve the performance of the facilities and equipments to support the above-mentioned R&D Directorates in the safe and efficient R&D activities.

R&D Centers of JAEA

