

【Basic policy】

Significance of international cooperation

- Efficient promotion of R&D and maximization of the results using resources of R&D institutes, etc. in other countries (international cooperation in a narrow sense)
- Increased JAEA's presence in the international nuclear community through contribution to addressing the common challenges for the utilization of nuclear energy, and the practical benefit brought to Japan by such contribution (international contribution)
- Contribution to the international nuclear community and Japanese industry through the international outreach of R&D (international outreach)



Basic policy for promoting international cooperation

- Contribution to ensuring nuclear safety
- Contribution to ensuring nuclear non-proliferation/nuclear security
- Maximization of R&D results
- Support for developing human resources in the nuclear field (support to other countries and development of globally-minded personnel at the JAEA)
- Overseas dissemination and international outreach of R&D results

International cooperation based on the basic policy and taking into account the respective characteristics of the below partners and cooperation areas given priority

【Partners】

Advanced nuclear energy countries

Mutually beneficial cooperation with the maximum use of expertise of the partners and sharing of resources

Emerging nuclear energy countries

Promotion of support concerning basic and fundamental nuclear technology, nuclear safety and nuclear non-proliferation/nuclear security

Nuclear-related international organizations

Participation in efforts to develop international standards of nuclear safety, nuclear security, etc. and multinational nuclear R&D activities

【Cooperation areas】

Decommissioning of Fukushima Daiichi NPP

Ensuring nuclear safety

R&D on the next-generation reactors

Research on the back end of nuclear fuel cycle

Support for the development of human resources in the nuclear field in other countries and development of globally-minded staff of the JAEA

Environmental restoration

Ensuring nuclear non-proliferation/nuclear security

Basic and fundamental nuclear research

Decommissioning of and waste management at JAEA's nuclear facilities

【Measures for promoting international cooperation】

Increased priority of international cooperation

Resource allocation placing priority on international cooperation

Enhancement of the global orientation of the JAEA

- Enhancing the R&D centers which serve as the core of international cooperation
- Organizing international symposiums and workshops and inviting excellent researchers from overseas
- Considering making English an official language at international R&D centers and promoting information transmission in English

Enhancement of the function of the Office of International Affairs

- Strengthening the function of the Office of International Affairs as an in-house think tank
- Effective utilization of the JAEA's overseas offices, which will include organizing events, etc.

Acquisition of external funds

Effective use of existing grant-in-aid programs for international cooperation in the nuclear field and encouragement of creating new competitive funds

【Duration and review of the Strategy】

The Strategy will be applied for a six-year period until FY 2021, and subject to review depending on the change in the situation, etc.



2. JAEA's Strategy for the International Cooperation (Partners and R&D areas)

【International cooperation with each partner】

Europe

- France: Broad cooperation including cooperation on the R&D concerning the fast reactor and nuclear fuel cycle
- UK: Promote cooperation concerning radioactive waste management, decommissioning, etc.
- Finland, etc: Promote cooperation on R&D concerning high-level radioactive waste

Russia and CIS

- Russia: Consider cooperation with the aim to promote innovative nuclear technology
- Kazakhstan: Continue cooperation on core melt down test of fast reactors, and consider cooperation on the high temperature gas-cooled reactor, etc.
- Ukraine : Start exchange of information on nuclear accidents

North America

- US: Based on the recognition that US is the most important partner, promote broad cooperation in the fields of R&D on the next-generation reactors, etc., safety research, and nuclear non-proliferation/nuclear security
- Canada: Promote R&D cooperation concerning the disposal of high-level radioactive waste

Asia and Pacific

- Thailand, Indonesia, etc.: Provide support for human resources development in the areas of nuclear safety and nuclear non-proliferation/nuclear security
- Australia: Promote cooperation on the neutron science, irradiation technology, etc.
- China: Promote cooperation on the human resource development in the field of nuclear non-proliferation and nuclear security
- India: Explore the possibility of the cooperation based on Japan's nuclear non-proliferation policy

International organization

In addition to increasing the number of JAEA staff assigned to the international organizations, contribute to their activities as below:

- IAEA: Actively participate in standing committees such as advisory committees and experts' meetings, and contribute to the formulation of the standards for nuclear safety, nuclear security, etc.
- OECD/NEA: Continue participation in standing committees and joint projects. Actively engaged in new initiatives such as NI2050.
- CTBTO: In addition to the operation of radionuclide monitoring stations and sample analysis, contribute to improvement of verification technology.
- EURATOM: Technical cooperation in measurement/detection of nuclear material and nuclear forensics. Jointly support human resources development in the field of nuclear non-proliferation/nuclear security.
- ISTC: Support projects of CIS countries using this framework.

【International cooperation in each R&D area】

Fukushima decommissioning

- Promote decommissioning by bringing together domestic and overseas expertise
- Globally disseminate the results including the accident progression scenario

Environmental restoration

- Provide scientific data on dose assessment of areas not decontaminated, environmental dynamics of radioactive materials, etc.
- Promote cooperation with countries engaged in efforts to address the similar challenges

Safety research for supporting nuclear regulatory body and research for enhancing nuclear safety

- Develop the function and system at Nuclear Safety Research Center that enable it to promote safety research gathering the global expertise
- Develop the function and system at Nuclear Science and Engineering Center that enable it to globally promote research for nuclear safety

Nuclear non-proliferation/nuclear security

- Contribute to enhancement of international nuclear non-proliferation/nuclear security by supporting human resources development and technology development in cooperation with IAEA, US, etc.
- Operate the radionuclide monitoring stations, etc. on a provisional basis in the framework of CTBTO

R&D on the next-generation reactors

- As to the fast reactor, implement joint research using frameworks such as those of bilateral cooperation with France and US or GIF and other multilateral cooperation, as well as being engaged in efforts at GIF for international standardization of safety design criteria
- As to the high temperature gas-cooled reactor, be engaged in efforts for technology demonstration and international standardization of safety design criteria

Basic/fundamental nuclear research

With regard to advanced nuclear science research, nuclear fundamental research and neutron application research, promote exchanges of personnel and information, and mutually beneficial research cooperation

Decommissioning of JAEA's facilities and waste management

Obtain expertise through cooperation with advanced nuclear energy countries such as France, UK and US, and participation in international projects, etc.

Research on the back end of nuclear fuel cycle

- As to nuclear transmutation technology using ADS, actively utilize cooperation with US, Belgium, etc.
- As to the R&D on the disposal of high-level radioactive waste, promote cooperation with countries, etc. having underground research facilities, such as European countries and Canada

Support for the development of human resources in the nuclear field in other countries and development of globally-minded staff of the JAEA

- Contribute to the human resources development in the nuclear field at emerging nuclear countries focusing on Asia
- Utilize opportunities of cooperation and exchange between domestic and overseas researchers at international research centers for developing human resources
- Cultivate leaders of the international nuclear community among the JAEA staff

3. Cooperation with European countries

UK

- Nuclear Decommissioning Authority (NDA): promote cooperation in the field of radioactive waste management and decommissioning
- Science and Technology Facilities Council (STFC): promote cooperation in the area of the high intensity accelerator development and its related equipment such as neutron devices
- National Nuclear Laboratory (NNL): implement cooperation as appropriate under the framework agreement.

Belgium

- Belgian Nuclear Research Centre (SCK-CEN): promote cooperation on ADS nuclear transmutation technology and decommissioning

France

(Overview)

- Cooperation on nuclear energy in broad areas
- Use GIF and other frameworks of the next-generation reactors development

(Details)

- Under the framework arrangement with the French Alternative Energies and Atomic Energy Commission (CEA) in the field of nuclear energy R&D, actively promote cooperation in wide areas including that concerning accident at Fukushima Daiichi NPS, holding review meeting annually
- Focus on ASTRID cooperation with regard to the Japan-France cooperation in the area of the fast reactor
- Continue R&D cooperation with French governmental organizations (IRSN and ANDRA) in the fields of nuclear safety/radiation protection and radioactive waste management
- Promote technical cooperation with EDF (Électricité de France) on the fast reactor system

Sweden

- 6 organizations from 6 countries including Swedish Nuclear Fuel and Waste Management Company (SKB): promote cooperation on the R&D for the disposal of high-level radioactive waste
- European Spallation Source (ESS) ERIC: promote cooperation on the spallation neutron source
- KTH Royal Institute of Technology (KTH): promote cooperation on severe accidents research

Germany

- Karlsruhe Institute of Technology (KIT): promote cooperation on safety research, etc.
- GSI Helmholtz Centre for Heavy Ion Research (GSI): promote cooperation concerning ion beam irradiation and high intensity accelerator development

Finland

- Posiva Oy: promote cooperation on the R&D for the disposal of high-level radioactive waste

Switzerland

- National Cooperative for the Disposal of Radioactive Waste (NAGRA) : promote cooperation on the R&D for the disposal of high-level radioactive waste

Russia

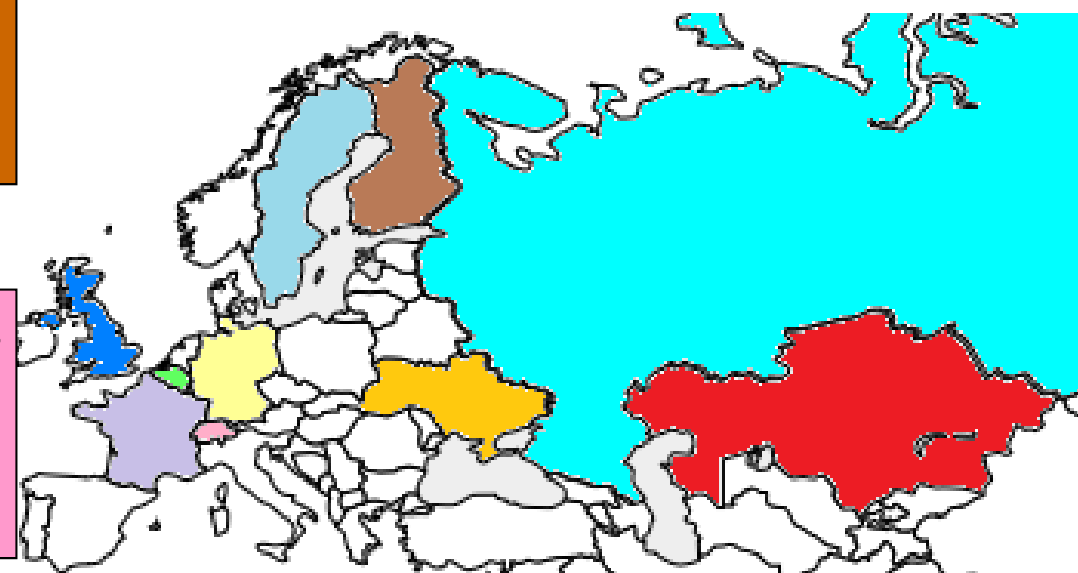
- Consider cooperation with the aim to promote innovative nuclear technology

Kazakhstan

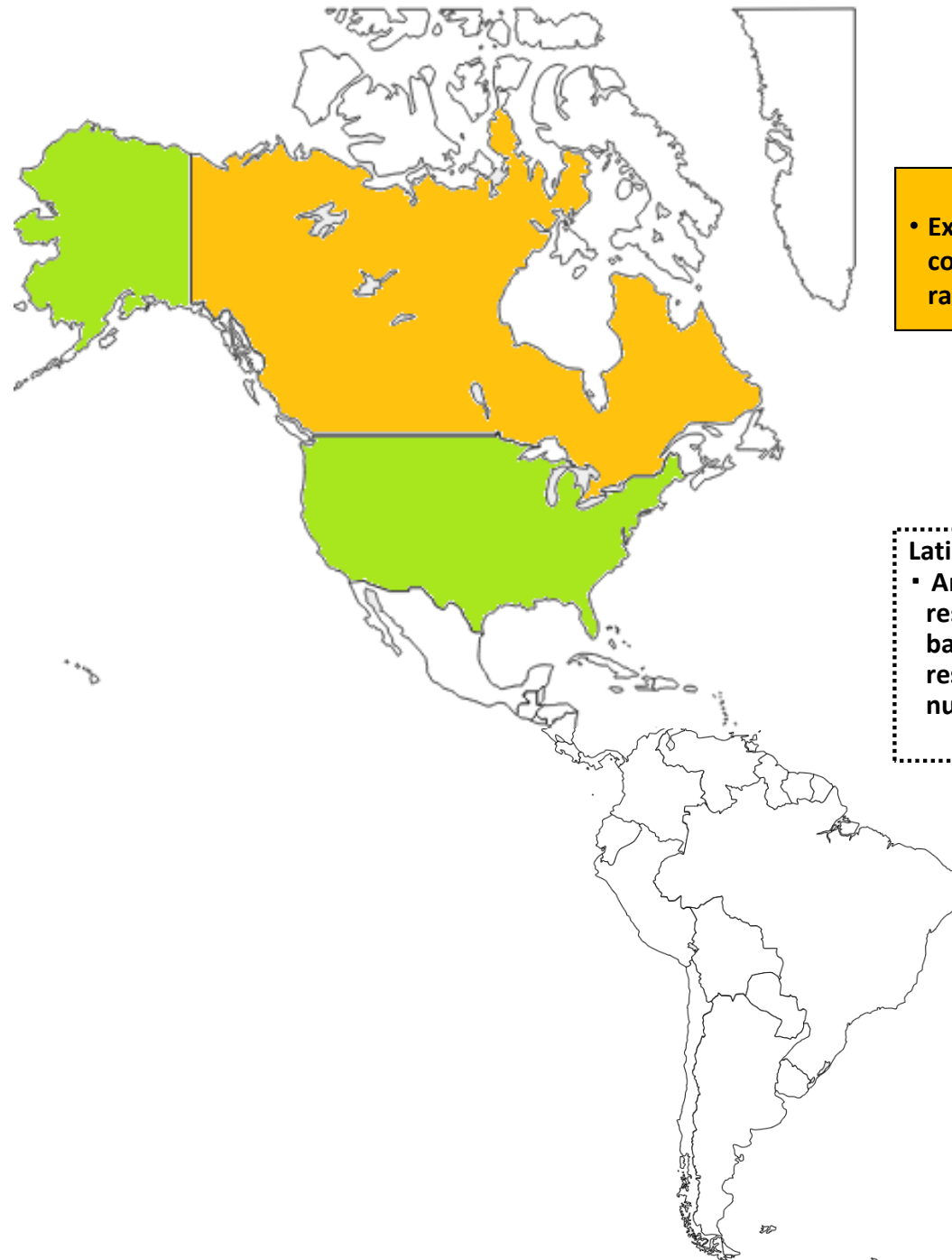
- National Nuclear Center (NNC): cooperation on the test relating to the core meltdown of the fast reactor, etc.
- Continue cooperation on the safety research and technology development, etc. of the high temperature gas-cooled reactor with organizations such as KazNU, NTSC and INP

Ukraine

- Institute for Safety Problems of Nuclear Power Plants (ISP-NPP), promote exchange of information on the accidents at Chernobyl NPS and Fukushima Daiichi NPS



4. Cooperation with North and Latin American countries



The US

(Overview)

- Promote cooperation with the world's most advanced research institutes in broad areas
- Use GIF and other frameworks of the next-generation reactors development
- Promote cooperation in the fields of nuclear energy R&D and nuclear security under Civil Nuclear Energy Research and Development Working Group (CNWG) and Nuclear Security Working Group (NSWG) (NSWG) that are established under the Japan-U.S. Bilateral Commission on Civil Nuclear Cooperation

(Details)

- DOE (Office of Nuclear Energy) : cooperation on the fast reactor, high temperature gas-cooled reactor, nuclear fuel cycle and waste management, improvement of safety of LWR, etc.
- DOE/NNSA: cooperation in the fields of nuclear non-proliferation/nuclear security
- Nuclear Regulatory Commission (NRC): cooperation in the field of safety research
- Environmental Protection Agency (EPA), research cooperation in the field of radiation protection

Canada

- Exchange information on the R&D concerning disposal of high-level radioactive waste

Latin America

- Argentina: explore possibility of research cooperation in the field of basic and fundamental nuclear research including provision of nuclear data processing technology



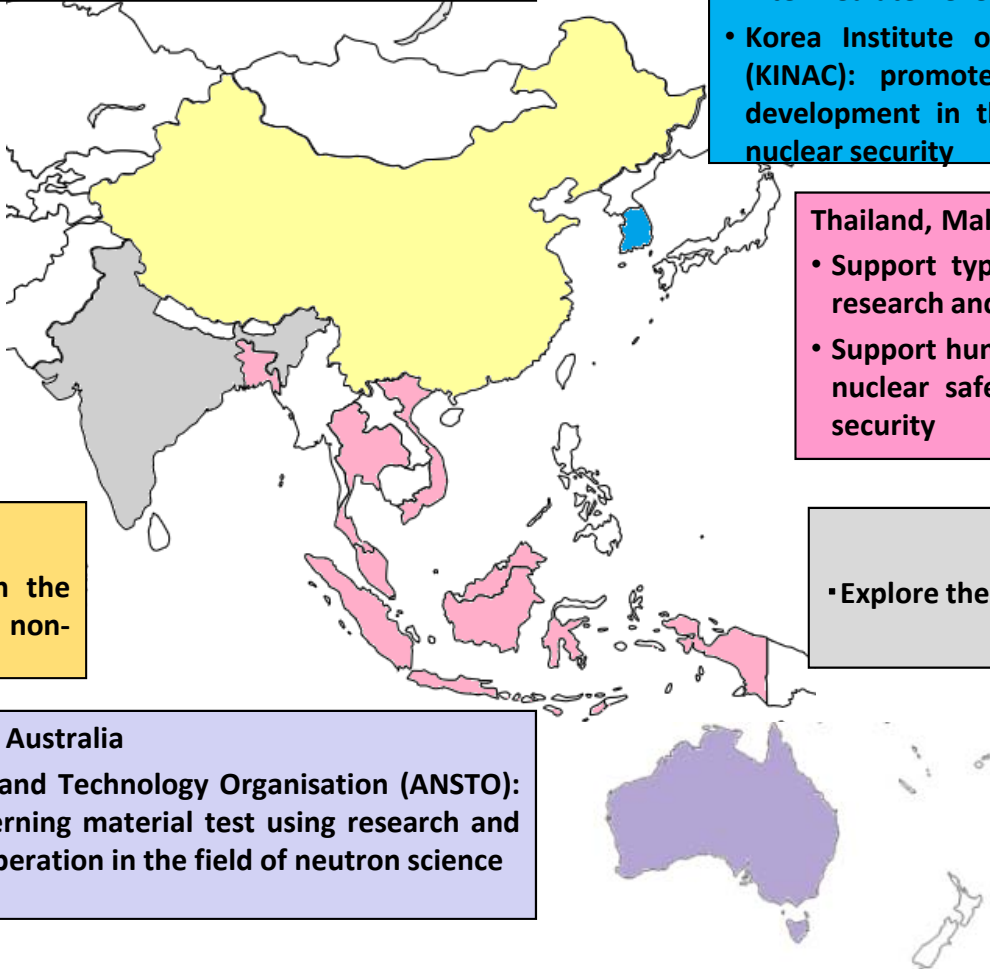
5. Cooperation with Asian, Pacific and Middle Eastern countries

China

- Multilateral cooperation in the framework of GIF in the field of fast reactor R&D
- Promotion of cooperation on the human resource development in the field of nuclear non-proliferation and nuclear security

Republic of Korea

- Korea Atomic Energy Research Institute (KAERI): actively promote broad cooperation on equal terms under comprehensive research cooperation arrangement
- Korea Radioactive Waste Agency (KORAD): exchange information on near-surface disposal of low-and intermediate -level radioactive waste
- Korea Institute of Nuclear non-proliferation and Control (KINAC): promote cooperation on the human resource development in the field of nuclear non-proliferation and nuclear security



Thailand, Malaysia, Indonesia, Vietnam, Bangladesh, etc.

- Support type cooperation in the field of the use of research and test reactors, etc.
- Support human resources development in the fields of nuclear safety and nuclear non-proliferation/nuclear security

Middle East

- Support human resources development in the field of nuclear safety and nuclear non-proliferation/nuclear security

India

- Explore the possibility of R&D cooperation

Australia

- Australian Nuclear Science and Technology Organisation (ANSTO): promote cooperation concerning material test using research and test reactors, as well as cooperation in the field of neutron science

6. Cooperation with international organizations, etc.

OECD/NEA

Participate in the standing committees and their subsidiary working groups as a members, and continue to assign staff to the secretariats. Support the secretariat function of GIF. Continue to participate in NEA Data Bank and the below joint projects, etc.:

- OECD Halden Reactor Project
- Co-operative Programme for the Exchange of Scientific and Technical Information Concerning Nuclear Installation Decommissioning Projects
- Benchmark Study of the Accident at the Fukushima Daiichi Nuclear Power Station (BSAF)
- Cabri Water Loop Project
- Thermodynamic Database (TDB) Project
- Thermodynamics of Advanced Fuels – International Database (TAF-ID) Project
- Thermodynamic Characterization Of Fuel debris and Fission products based on scenario analysis of severe accident progression at Fukushima Daiichi NPS (TCOFF)

IAEA

- Participate in standing committees such as Standing Advisory Group on Nuclear Energy as a member. Dispatch staff to the secretariat. More than 100 researchers attend the expert meetings annually. Continue active participation in IAEA activities.
- For enhancement of safeguards, dispatch staff to IAEA as its Department of Safeguards staff or inspectors. Promote cooperation under the cooperative arrangement in the field of nuclear security.
- Continue fulfilling the duties as one of the Network of Analytical Laboratories certified by IAEA.
- Continue experts' participation in the efforts to develop international standards in the field of nuclear safety and nuclear security.

CTBTO

In accordance with the entrustment agreement with CTBTO, continue provisional operation of the radionuclide monitoring stations (Takasaki, Okinawa) and samples analysis at the certified laboratory (Tokai)

European Atomic Energy Community (EURATOM)

- Jointly conduct human resources development in the fields of nuclear non-proliferation/nuclear security for the emerging nuclear energy countries, etc.
- Promote technical cooperation concerning the nuclear measurement and detection, nuclear forensics, etc.

ISTC

Dispatch personnel to ISTC, and support projects of CIS countries participating in ISTC

