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THE 14TH FNCA MINISTERIAL LEVEL MEETING DECEMBER 19TH, 2013, TOKYO JAPAN

The 14th FNCA Ministerial Level Meeting (MM) was held at Mita Conference Hall, Tokyo, Japan on December 19, 2013, and organized by the Japan Atomic Energy Commission (JAEC) and the Cabinet Office of Japan (CAO). The meeting was attended by ministerial level representatives (including 2 ministers and 3 vice ministers, the Directors of the Nuclear Administrative Agencies, and others) from 12 member countries i.e., Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, the Philippines, Thailand, and Vietnam.

(1) Opening

The Hon. Mr. Ichita YAMAMOTO, Minister of State for Science and Technology Policy, CAO, delivered welcoming remarks, in which he expressed welcome to all the participants and stated the prospect of nuclear development in Japan including TEPCO's Fukushima Daiichi Nuclear Power Station Accident response.

(2) Country Reports

Each of the 12 participating countries delivered their country report, focusing on national nuclear energy policy, nuclear regulatory system, status and plans of research, development and utilization of nuclear energy and international cooperation, and expectation to FNCA activities. (See pages 3-5 for the reports summary)



The Hon. Mr. Yamamoto



A scene of the meeting

(3) Reports of FNCA Activities

Dr. Sueo MACHI, FNCA Coordinator of Japan, summarized major achievement of FNCA projects and suggested that the FNCA Coordinators should organize an annual meeting of project leaders so that they share the current status of each projects and the policy and direction decided by the MM. Dr. Akira OMOTO, Professor of Tokyo Institute of Technology, reported the summary of the 5th FNCA Panel Meeting held in August 2013. (See page 17 for the meeting summary)

(4) Effective Implementation of Projects Outcomes and Building Relationships with End-users

Dr. MACHI discussed major challenges in building networks between the nuclear application R&D institutes and end-users for the practical use of FNCA project outcomes. Dr. Alumanda DELA ROSA, Director of the Philippine Nuclear Research Institute, stressed the effectiveness of direct interaction between researchers and the end-user for a successful technology transfer under the condition that government provides researchers the enabling environment for technology transfer.

The meeting exchanged the experiences and practices in the technology transfer in member countries and the chairman concluded the discussion with stressing the importance of continuing the effort to disseminate information utilizing diverse information channels.

(5) Meeting Resolution & Summary

Mr. Carlos Torres VIDAL, Head of Prevention Section in the Office of Nuclear Security, IAEA, overviewed political environment for nuclear security, the recognition of the essential roles of nuclear security culture and key challenges in developing nuclear security culture. Then The Hon. Prof. Dr. Djarot Sulistio WISNUBROTO, Chairman of National Nuclear Energy Agency of Indonesia, reported the experience of assessing nuclear security culture in his agency.

The meeting exchanged experiences and practices for nuclear security culture development in each country. The Ministry of Education, Culture, Sports, Science and Technology (MEXT) stated that it will support nuclear security culture development in member countries by providing seminars conducted by ISCN and a workshop on nuclear security culture in Asian region, cosponsored by ISCN and IAEA, and by sharing best practices of nuclear security culture development in each member country by use of the FNCA website.

(6) Meeting Resolution

Dr. Shunsuke KONDO, Chairman of JAEC introduced a draft resolution of the 14th FNCA Ministerial Level Meeting and it was adopted.

The Followings are the points of the Meeting Resolution.

- Continuing to share lessons learned from the Fukushima accident and pursuing further cooperation toward nuclear infrastructure development among FNCA member countries, which includes ongoing themes such as stakeholder involvement, emergency preparedness and response and its regional collaboration and nuclear safety related infrastructure enhancement, and new themes such as safety, economics and waste disposal issues with small and medium sized reactor
- Encouraging a review of nuclear human resource development opportunities within each of the member countries through a workshop including senior officials involved with policy and planning human resources development, and budget allocations
- Striving further to build a network with potential end users to accelerate the practical use and commercialization of FNCA achievements in the radiation utilization area and consequently contribute to socio-economic benefits in the sub-topic areas of radiation processing on natural polymers, biofertilizer and mutation breeding particularly
- Encouraging each country to create a steering committee for each project and a meeting of Project Leaders to share information and enhance project activities, and to further pursue higher productivity of the projects and closer cooperation among different projects through that meeting
- Encouraging each country's government and its nuclear stakeholders to build a nuclear security culture in line with international best practices as a response to nuclear security concerns arising in the world



Delegates of Member Countries

Summary of Country Reports

Presented at the 14th Ministerial Level Meeting

Australia

The Australian Government has prioritised a new Energy White Paper to ensure industry and consumers can have certainty and confidence in government policy and its delivery is scheduled for September 2014. The Australian Government has recognised the importance of nuclear science and technology in Australia through funding for new neutron research instruments at the OPAL research reactor facility in Sydney and the establishment of a Centre for Accelerator Science.

I reiterate Australia's continuing support for the FNCA and congratulate the Forum on its achievements in improving socioeconomic development through active regional partnerships in the peaceful and safe utilisation of nuclear technology.



Ms. Nadia LEVIN
General Manager, Government,
International and External Relations,
Australian Nuclear Science and
Technology Organisation

Bangladesh

The Government of Bangladesh has declared "Vision 2021-Digital Bangladesh" with a view to build a modern, knowledge-based and technology driven middle income country by 2021. We consider nuclear technology as one of the tools to achieve the Vision.

Our government has started to implement Rooppur Nuclear Power Project for generation of 2000 MW by 2020. Independent regulatory authority is established on February 12, 2013 and necessary rules and regulation are drafted for this project.

We consider the FNCA is a powerful tool to promote and coordinate research and development activities to answer national problems through utilizing the experience, expertise and resources available within the region. It is assured that the Bangladesh vows its continued support and commitment to ensure the success of the regional cooperation under the FNCA framework.



The Hon. Mr. Abu Sayeed
Mohammad FIROZ
Chairman, Bangladesh Atomic Energy
Commission

China

China will stick to the policy of developing nuclear power safely and efficiently, and raise the proportion of clean energy in the primary energy. With the Fujian Ningde NPP Unit 1 and Liaoning Hongyanhe NPP Unit 1 being put into commercial operation in April and June of 2013 respectively, the number of in-service nuclear power units in Chinese mainland has amounted to 17, with the installed capacity of 14.69 GW.

As an important multilateral platform for national cooperation in the nuclear area in this region, FNCA has played an important role in promoting its member states' cooperation on nuclear energy and technology. To further strengthen the role of FNCA, we proposed to emphasize the cooperation on nuclear technology experience sharing, without falling into the trap of politicized discussion which may lessen the actual effect of FNCA.



The Hon. Mr. LONG Maoxiong
Deputy Secretary General, China
Nuclear Energy Association

Indonesia

The Ministry of Research and Technology of the Republic of Indonesia has undertaken a review of the S&T policy and decided to focus on 7 priority areas which (1) Food, (2) Energy Securities, (3) transportation, (4) Information and Communication Technology, (5) Health and Medicine, (6) Advanced Technology and (7) Defense Technology. Among other above priority areas, Nuclear Science and Technology (NST) have been recognized strongly involved in at least the four focuses, those are: Food and Energy Securities, Health and defense technology. Indonesia foresees the significant impact of NST for security supply of energy and food and health.

As a whole, we are very supportive to deal with all activities developed among FNCA countries based on mutual benefit manner.



The Hon. Prof. Dr. Djarot Sulistio
WISNUBROTO
Chairman, National Nuclear Energy
Agency

Japan

In July 2013, the Nuclear Regulation Authority (NRA), a newly established independent body that solely exercises regulatory authority in the field of nuclear safety, security and safeguards in Japan, published a new set of regulatory rules for nuclear power plants in which the lessons learned from the Fukushima accident were reflected. Currently the NRA has been verifying compliance of the 14 reactors with the newly enacted regulations.

Japan will continue the safe use of nuclear energy, while pursuing a greener and healthier society. Japan will also continue to cooperate with the FNCA countries to advance the safe use of nuclear energy as well as the nuclear science and technology for social and economic development in each country, in the spirit of prospering together, saving a green Asia and protecting human lives.



Dr. Shunsuke KONDO
Chairman, Japan Atomic Energy
Commission

Kazakhstan

Republic of Kazakhstan following independence and termination of nuclear weapon testing, have been gradually conducting the policy for expansion of peaceful application of nuclear power. Our republic also meets the obligations under the CNTBT - monitoring of nuclear tests at nuclear testing sites. Currently, under the program of industrial and innovative development, our republic set a course for "green power engineering" and development of nuclear electric power generation for its share in total amount of generated electric power to be 7%.

Development of nuclear technology is approved among scientific priorities for our scientists. In 2013, the 9th International Conference "Nuclear and Radiation Physics" was held; the experts from 26 countries took part in it. Together with this Conference, FNCA 2013 Work Meeting was held as a part of the project "Research Reactors Network". This combination enabled to know a large audience about FNCA activity.



The Hon. Dr. Erlan G.
BATYRBEKOV
Director General, National Nuclear
Center

Korea

Even after the Fukushima Daiichi Accident, nuclear energy is considered as the most viable option for addressing numerous challenges faced today, including climate change and the rising demand for energy. Against such backdrop, Korea has made continuing efforts to expand its nuclear power program, while placing the highest priority on safety. There are currently 23 nuclear power plants in operation, accounting for 30% of our domestic electricity generation and plans are underway to build 11 new reactors by 2024.

The Korean government is putting in unwavering efforts to enhance our people's quality of life through the appliance of radiation technology. We have set mid-to-long term plans, including medical, agricultural, industrial, and environmental initiatives.

Korea firmly believes that the FNCA, as it has for the last 14 years, will continue to contribute to the peaceful use of nuclear energy in the Asian region.



The Hon. Mr. MOON Hai Joo
Assistant Minister for Research and
Development Policy,
Ministry of Education, Science and
Technology

Malaysia

Malaysia recognises that the issue of energy security is vital in supporting our socio-economic growth trajectory to become a high income nation by 2020. Malaysia is in the midst of studying the deployment of nuclear energy as one of the long term option for electricity generation. Nevertheless, prior and precursor to any decision above, Malaysia will continue to focus on building domestic capacity and capability, including human resources developments, regulatory framework and close engagement with stakeholders. Apart from the nuclear power preparatory programme, we are also continuously upgrading the level of competencies in non-power application of nuclear technology in the country.

Let me assure you once again that the Government of Malaysia vows its continued support and commitment to ensure the success of the regional nuclear cooperation under the FNCA framework.



The Hon. Dr. Ewon EBIN
Minister, Science, Technology and
Innovation (MOSTI)

Mongolia

Mongolia is aware that the peaceful use of nuclear technology is crucially important for us when it comes to dealing with global issues, including weather change, global warming, air pollution, environmental pollution and mining development. Therefore, Mongolia has been closely working with the FNCA member and regional countries since it became member of FNCA in the year of 2010. Mongolia has been promoting the research, development and utilization of nuclear energy for the past decade, limiting them to the peaceful purposes with a view to securing energy resources to the future, promoting science and industry and thereby contributing to the improvement of welfare of human society as well as the living standard of the people in Mongolia.

Mongolia, as a member of the FNCA, will fulfill its policy of peaceful application of nuclear technology and continue to cooperate with other member countries, promoting the peaceful use of nuclear energy around the Globe.



The Hon. Mr. SAINBILEG
Chuluunbat
Deputy Chief, Cabinet Secretariat of
Government of Mongolia

Philippines

The Philippines' sojourn with the FNCA is one such exemplar of international collaboration where the country continues to benefit richly from. The Forum's activities relevantly also dovetail with the national agenda put forth by our government: to work toward a smarter Philippines driven, among others, by science & technology's tools, know-how, innovation and best practices.

Our stand on nuclear power has not changed with regards to the nuclear option in the long term. We are taking the necessary studies on which a national decision may be made.

In closing, the importance of the Cooperation to the furtherance – not only of our common regional thrust – but of our own national development agenda cannot be underscored. The FNCA is certainly seen by its Member States as a vital vehicle for regional cooperation and it is our continued partnership that will further push it towards more accomplishments in its fields of endeavor.



The Hon. Dr. Amelia P.
GUEVARA
Undersecretary for Research and
Development, Department of Science
and Technology

Thailand

Thailand continues giving our precedence to nuclear safety, security, safeguards and the peaceful applications of nuclear science and technology. I am pleased to express that the establishment of the ASEAN Network of Nuclear Regulatory Bodies or Relevant Authorities have been developed substantially in 2013. I believe that this network is an important mechanism for enhancing the regulatory activities and further strengthening nuclear safety, security, and safeguards within the ASEAN countries.

The formulation of Atomic Energy Policy of Thailand is now in the final phase. We expected that the Policy will be implemented in 2014, with its objectives to strengthen our national nuclear and legal framework and reaffirm our commitment to the international community on nuclear safety and safeguards, as well as to be able to ratify the relevant international legal instruments.



The Hon. Dr. Somporn
CHONGKUM
Executive Director, Thailand Institute
of Nuclear Technology

Vietnam

The nuclear power programme of Vietnam is ongoing with the first two nuclear power projects with capacity of 4000MW in order to meet national energy demand. Currently, Viet Nam, in cooperation with Russia and Japan, has almost completed feasibility studies for the two NPP Projects in Ninh Thuan Province.

In order to enhance the nuclear science and technology capacity, the Government of Viet Nam has decided to establish a Center for Nuclear Science and Technology with a new nuclear research reactor and related laboratories, and simultaneously approved the National Research and Development program on nuclear energy for peaceful purposes.

Taking this opportunity, the Vietnam delegation reaffirms our full supports to the FNCA activities to promote and enhance research, development, application of nuclear science and technology for the peaceful purposes.



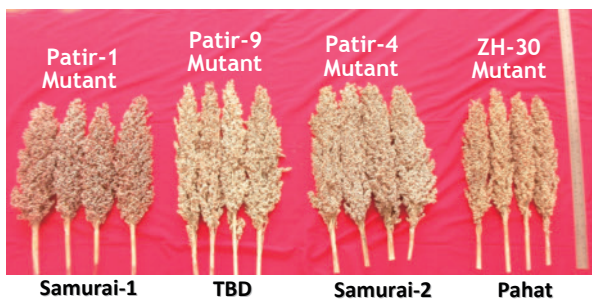
The Hon. Dr. LE Dinh Tien
Vice Minister, Ministry of Science and
Technology of Vietnam

INTRODUCTION OF 10 ON-GOING FNCA PROJECTS

Radiation Utilization Development Industrial/Environmental Utilization

Mutation Breeding Project

The goal of this project is to help increase food production and improve food quality in Asian countries. This can be done by promoting the use of radiation breeding technology such as gamma rays and ion beams to develop new mutant varieties of key crops including rice, banana, orchid, soybean and sorghum that are more resistant to droughts, insects and diseases. From 2013, a new activity has been progressing that focuses on mutation breeding of rice for sustainable agriculture in Asia, i.e., it uses gamma rays or ion beams to establish mutant varieties such as high-yielding varieties under low input conditions, and new varieties tolerant to diseases, droughts, and other climate changes, according to the participating country's demands.



Sorghum mutant varieties released in Indonesia

Recent Project Achievement

An activity relating to rice, one of three major cereals in the world, was started in 2007. It focused on modifying amylose content as a common theme as well as respective breeding objectives in participating countries, such as high yield and environmental tolerance including salinity tolerance. For an effective study, analyzing methods are shared and irradiation facilities are utilized together. This activity was successful in

producing new mutant lines that suited the needs of each member country, and was concluded in 2012. Some of the new mutant varieties developed in this activity were officially registered in Bangladesh and Vietnam.

Former outcomes of this project, such as a Mutation Breeding Manual and Achievement Report for each activity, have been provided on the FNCA website (http://www.fnca.mext.go.jp/english/mb/e_introduction.html).



Achievement Report
for Sub-Project on
Composition or Quality in Rice

Workshop Outline

- Period: March 4 to 7, 2014
 - Venue: Jakarta (Indonesia)
 - Number of Participants: 18 (Bangladesh, China, Indonesia, Japan, Malaysia, The Philippines, Thailand, Vietnam, Observer from IAEA/RCA)
- On the first day of the workshop, an open seminar titled "Strengthening Mutation Breeding Approach for Mitigating Climate Change," cohosted with the National Nuclear Energy Agency of Indonesia (BATAN) was held. This was attended by around 150 participants from FNCA member countries, BATAN, related research institutes, universities and companies.



Open Seminar

At the workshop, reports and work plans were given by the member countries for a new activity on mutation breeding of rice for sustainable agriculture, which was just started in 2013. Breeding objectives and selection methods were discussed and it was confirmed that the plan is to continue having common use of irradiation facilities. Then previous activities relating to banana, orchid, sorghum and soybean were presented on the use and extension of outputs.

IAEA/RCA's project for mutation breeding to improve traits such as tolerance to abiotic stresses adapted to climate change was reported. It was agreed that cooperation with the FNCA Mutation Breeding Project has been improved by having information exchange and common usage of ion beams.

Participants visited the Pusakanegara rice experimental station of the Indonesian Center for Rice Research, the Ministry of Agriculture, and viewed the research activities and BATAN mutant materials cultivated in the rice field.



Visit to Pusakanegara rice experimental station

Biofertilizer Project

In order to supply food to increasing population in Asia, agricultural production should be increased and a large amount of fertilizer is required. Most of fertilizers are chemical fertilizers, however oil and natural gas are needed to produce chemical fertilizers. Furthermore, improper use of chemical fertilizers and other agrochemicals damage agro-environment, for example nitrate pollution in ground water. Therefore, establishment of environmental friendly sustainable agriculture in Asia and reduction of agrochemical input are required.

Soil contains a large number of microorganisms which are beneficial for plants to grow. Such microorganisms include rhizobia and nitrogen fixer PGPR (Plant Growth Promoting Rhizobacteria), which are symbiotically or non-symbiotically associating with plants such as soybean, rice so forth and supply nitrogen as an essential nutrient to those plants, mycorrhizal fungi and phosphorus-solubilizing bacteria which help absorption of phosphorus.

This biofertilizer project aims to reduce the amount of chemical fertilizer input without decreasing yield of crops, by using function of beneficial microorganisms in biofertilizer, which increase availability of plant nutrients from soil. And major target is developing biofertilizers containing the beneficial microorganisms promoting nutrient supply to plants using carriers^{*1} by γ -radiation sterilization method to remove contaminated soil microorganisms in those carriers.



Multi-functional biofertilizer developed in Malaysia

Recent Project Achievement

Several multi-functional biofertilizer are developing under FNCA countries. Malaysia, and Indonesia developed carriers using γ -radiation sterilization method. Furthermore, in 2012, the Philippines commenced to produce the carriers using γ -radiation sterilization method.

FNCA countries recognize that the biofertilizers using carriers by the radiation sterilization technique are important to keep those qualities and disseminate to end-users. Therefore, to establish close cooperation between a nuclear research institute having a radiation facility and an agricultural research institute studying biofertilizers, the cooperation in countries participating in this project has been augmented through discussions in workshops and proactive appeals made by participants.

Workshop Outline

- Period: November 18 to 21, 2013
- Venue: Los Baños (The Philippines)
- Number of Participants: 11
(China, Japan, Malaysia, Mongolia, The Philippines, Thailand, Vietnam)

On the first day of the workshop, the development of biofertilizer and the activities of FNCA were reported in the open seminar, which was attended by about 80 researchers and students from the University of the Philippines, the workshop venue, and the relevant research institutes.

During the workshop, each country reported the research activities of the fiscal year. Also, attendants developed active discussions on the core topics in the research and development of biofertilizers: (1) Extension of Radiation Sterilization for Commercial Biofertilizer Production, (2) Development of Multi-functional Biofertilizer and Strategy for Extension to Farmers, (3) Evaluation of Experiment for Synergistic Effect of Biofertilizer and Irradiated Oligochitosan^{*2}, Plant Growth Promoter, in 2013 and Future Prospects, and (4) Development of FNCA Guideline for Biofertilizer Quality Assurance and Control.

In the discussion about activity plans of the project, specific ideas were suggested for the countries where irradiation sterilization has not been implemented in the commercial production of carriers. For example, it was suggested for project leaders to contact biofertilizer producers and do a demonstration to prove the benefits of irradiation sterilization. In the development of multi-functional biofertilizers, the participants agreed on the application of microbiology breeding with irradiation. As for the publication of the FNCA Guideline for Biofertilizer, which is now in the draft stage, members agreed that experts from each member country will make the necessary corrections to the draft, and the first volume (entitled "FNCA Guideline for Biofertilizer Vol.1 Quantification of Beneficial Microbes in Biofertilizer for Quality Assurance and Control") will be published on the FNCA website this fiscal year. The title for the second volume was agreed to be "FNCA Guideline for Biofertilizer Vol. 2 Production of Biofertilizer Carrier Using Radiation Technology." The draft of Vol. 2 will be prepared next year by experts from Malaysia.

Participants visited Costales Nature Farm, an organic farm located in Majayjay, which is using biofertilizer made by the BIOTECH institution of the University of the Philippines. The FNCA participants were given a tour to see different organic vegetables grown and shipped and animals fed on organic products from the farm.



Visit to the Costales Nature Farm

*1 Carriers: Materials used to maintain and propagate microorganisms. Peat and compost are typically used.

*2 Irradiated Oligochitosan: Chitosan with molecular weight reduced by irradiation.

Electron Accelerator Application

Project

This project has conducted research on practical applications of radiation processing to promote technology transfer of the resulting products which bring benefits to the participating countries and aims at widespread use of electron accelerators¹ and gamma-rays in the industrial field. Lately, major activity is R&D for plant growth promoter and super water absorbent as soil conditioner. Information and experimental data obtained in the participating countries have been shared with the other participating countries as well as the IAEA/RCA to achieve synergistic effects on R&D. In the 4th phase that commenced in fiscal 2012 (this phase will span to fiscal 2014), new guideline has been prepared in order to promote adaptation of plant growth promoters in rice plants and chili, which have high economic impacts. Field tests of super water absorbent as soil conditioner in arid regions have also been conducted.

Recent Project Achievement

Radiation processing of natural polymers² enables production of highly active plant growth promoters and super water absorbents for soil conditioning in arid regions. Field tests in respective countries revealed that a chitosan-based plant growth promoter depolymerized by radiation increased production yields of chili, rice, vegetables, fruit, etc. Plant growth promoters derived from chitosan have already been commercialized in Indonesia, Japan, and Vietnam. Especially the plant growth promoter has been used for production of rice, vegetables and other crops in Vietnam. Super water absorbents produced by cross-linking of natural polymers have been proven to be effective as water retention in sandy soil of arid regions.

"FNCA Guideline on Development of Hydrogel and Oligosaccharides by Radiation Processing", published in October 2009, has been updated by additional new results every year. Now this guideline serves as a reference for production and usage of high-quality materials for the effective promotion of R&D and industrial applications in each country. Also, a list of electron-beam and gamma-ray irradiation facilities in the FNCA-participating countries is uploaded on the FNCA website to provide current information for the users.



Effect of Super Water Absorbent on Baby Corn

Effect of Super Water Absorbent on Young Corn

Workshop Outline

■ Period: October, 29 to November 1, 2013

■ Venue: Kajang (Malaysia)

■ Number of Participants: 25

(Bangladesh, China, Indonesia, Japan, Malaysia, Mongolia, The Philippines, Thailand, Vietnam, Observers from IAEA/RCA; Myanmar, Pakistan)

The workshop was attended by the nine FNCA countries, along with two IAEA/RCA members, Myanmar and Pakistan, attending as observers. The participants presented their progress of R&D on plant growth promoter and super water absorbent produced by irradiation processing.

At the open seminar, which was held on the first day of the workshop, about 40 experts from local research institutions in agriculture or industrial fields participated. Topics were recent activities in overseas market development for esthetic facial masks developed in Malaysia and R&D of three-dimensional dosimetry gel that can be useful for advanced cancer therapy in Japan.

Concerning the plant growth promoter, the current progress of field experiments was reported from the participating countries. New results such as activated photosynthesis, enhanced disease resistance, and shortened harvesting cycles, were obtained as the effect of plant growth promoter on vegetable etc. Specifically, Mongolia has been applying this technique to potatoes and barley. Vietnam and China tried to add oligochitosan into the feeds of livestock farming and aquaculture. Promising phenomena such as body weight gain in chicken, improvement of udder treatment in milking cows, better quality and taste of pork have been observed.

Super water absorbents made from inexpensive agricultural waste like coir fiber powder showed an effective soil improvement in arid areas to facilitate seed germination and efficiency of irrigation water. These results proved that super water absorbents could maintain high water retention in pot experiments and field experiments. As a future planning, it was suggested to develop value-added super water absorbents by incorporated with biofertilizer and plant growth promoter. The participants agreed to continue cooperation and collaboration with IAEA/RCA in the information sharing of radiation processing including the R & D of plant growth promoter and super water absorbent.



Technical Visit to Malaysian Nuclear Agency

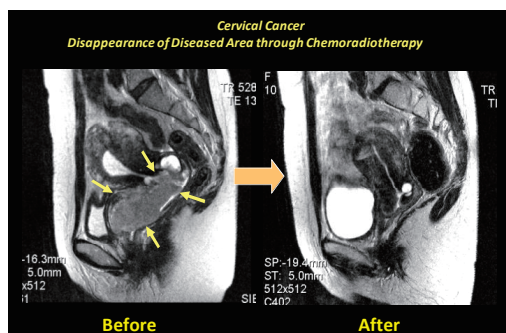
¹ Electron accelerator: Equipment designed to acquire high-energy electron beams by accelerating electrons by applying high voltage to them. Used in radiation processing. sed in radiation processing.

² Natural polymers: Naturally produced high-molecular compounds. Typical examples include cellulose, starch, proteins, chitin, and chitosan.

Radiation Utilization Development Healthcare Utilization

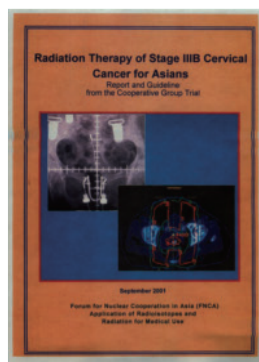
Radiation Oncology Project

This project aims at promoting widespread use of the radiation therapy and improvement of its quality in the Asian region, by establishing standard radiation therapy protocols through joint clinical trials on cancers predominantly observed in the region (cervical, nasopharyngeal and breast cancers, especially).



Disappearance of Diseased Area through Chemoradiotherapy

Recent Project Achievement



Radiation Therapy of Stage IIIB Cervical Cancer for Asians

Standard treatment protocols have been developed through international joint clinical trials for cervical, nasopharyngeal, and breast cancers by 11 participating countries in the Asian region. Improvements of treatments in the respective countries have been obtained based on the effective treatment methods that were obtained through clinical trials.

The treatment results to date have been equivalent to, or superior to, those of other international clinical trials. Accordingly, the protocols developed in this project have been widely used in clinical practice in Asian countries.

The protocol CERVIX-III for chemoradiotherapy for cervical cancer, for which clinical trials have been conducted since 2004, has been confirmed to be effective for Asian people in the FNCA region, and has been adopted as the standard treatment method in clinical practice in Malaysia, Thailand, Vietnam and other countries. The results of the clinical trials have been reported in original articles in international medical journals.

Workshop Outline

- Period: November 19 to 22, 2013
- Venue: Seoul (Korea)
- Number of Participants: 25
(Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, The Philippines, Thailand, Vietnam, Observers from IAEA/RCA: Myanmar, Pakistan)

In addition to the participants from 11 FNCA member states, 2 representatives from Myanmar and Pakistan (members of IAEA/RCA) attended the workshop as observers.

In the workshop, data from clinical trials on locally advanced cervical cancer, nasopharyngeal cancer, and breast cancer carried out in different countries were reported and discussed. Also, suggestions were made on the new protocol for cervical cancer (CERVIX-V). This protocol includes 3D image-guided brachytherapy (3D-IGBT), which requires advanced skills. Therefore, the participants agreed that its feasibility must be examined for each member country. The results from the survey conducted in Kazakhstan on quality assurance and quality control (QA/QC) of external beam radiotherapy were also reported and discussed. In the session for locally advanced cervical cancer protocol (CERVIX-IV), the follow-up results of clinical trials were reported, which showed CERVIX-IV was efficient and effective for patients (the five-year overall survival and local control rates^{*1} were 71.6% and 89.3%, respectively).

The open seminar held on the last day of the workshop was attended by about 50 professionals, including physicians, nurses, and medical physicists. There were six lectures on the themes of 1) Introduction of FNCA Radiation Oncology Project, 2) Present Status of Radiation Oncology in Korea, 3) Concurrent Chemoradiation for Head and Neck Squamous Cell Carcinomas, 4) Intensity Modulated Radiotherapy (IMRT)^{*2}, 5) Breast Cancer and 6) Particle Beams. In the technical tours, the participants visited Korea Institute of Radiological & Medical Sciences (KIRAMS) and National Cancer Center of Korea to see the actual sites of radiation therapy of the country.



Workshop



CyberKnife Center of KIRAMS

*1 Local control rate: A rate at which focuses applied with radiation are controlled.

*2 Intensity Modulated Radiotherapy (IMRT): Medical treatment to further reduce the exposed dose on normal tissues by forming shapes of distribution specific to the shape of the tumor.

Research Reactor Utilization Development

Research Reactor Network Project

Commencing in fiscal 2011, this project aims at improving the skill levels of researchers and promoting mutual use of research reactors in Asian countries. These targets will be achieved by enhancing mutual understanding on features and the utilization status of research reactors in the relevant countries and by establishing a regional network. The project specifically endeavors to establish a regional network for the stable supply of radioisotopes (RI)* for medical applications.

Recent Project Achievement

In the workshop, information was shared with such themes as the current status of research reactors in each member country, plans to construct new research reactors, and production and use of RI. In addition, the members discussed the development of a network for production and supply of RI in the FNCA area. With this fiscal year being the last year of the current phase, the participants reviewed each country's status on the establishment of national committees for the FNCA regional network, as well as demands and supply status of RI for medical use. Based on the review, the members agreed to continue the activities into the 2nd phase.



RI products for industrial, medical and agricultural application etc.

Workshop Outline

- Period: September 24 to 27, 2013
- Venue: Almaty (Kazakhstan)
- Number of Participants: 17

(Australia, Bangladesh, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, The Philippines, Thailand, Vietnam)

In the workshop, the latest information on the use of research reactors in each country and nationwide network development for stable RI production and supply in each country was reported. The participants exchanged their ideas on possible international cooperation in designing and use of



Workshop

research reactors and on the needs of FNCA regional network development for stable production and supply of RI.

Most of the participating countries have already established national committees for stable RI production and supply, while Malaysia and Indonesia are in the process of doing so. The participants agreed that the FNCA regional network will cooperate with the activities of the OECD/NEA High-Level Group on the Security and Supply of Medical Radioisotopes (HLG-MR). Considering that fiscal 2013 was the last year of the first phase, the members agreed to continue the activities into the 2nd phase and work to achieve the revised goals and specific objectives.

Concurrently with the workshop, the Joint Open Seminar of ICNRP-09/FNCA was held, and the reports on the research and test reactors and medical RI were delivered from Australia, Indonesia, Japan, Kazakhstan, South Korea, Russia and Uzbekistan.

The participants visited the Institute of Nuclear Physics (INP) and toured the main facilities: WWR-K reactor and Radiochemistry and Isotope Production Center to gain a further understanding of how the facilities are used and what kinds of research are conducted in the institute.



Open Seminar

* Radioisotope (RI): An atom that emits radiation when changing from an active state to a stable state; its mass is different from, yet its chemical characteristics are identical to, other atoms of the same chemical element. (Also known as radionuclide)

Neutron Activation Analysis Project

This project aims at utilizing neutron activation analysis (NAA)* to evaluate the results of sample analyses and achieve social and economic benefits. Currently, analyses are conducted on geochemical samples, food samples, and environmental samples.



Collecting samples of marine sediments



Preparation of analyses on food samples

Recent Project Achievement

Environmental samples (e.g., airborne dust) collected in various Asian countries for the last eight years have been analyzed using NAA, providing information on the state of environmental pollution in the respective countries. The results have contributed greatly to environmental administration, such as the formulation of environment improvement measures conducted in China and the Philippines.

NAA of geochemical samples has been carried out for the purpose of exploring mineral resources and investigating regional pollution. Food samples were selected based on the current conditions in the participating countries, and their elemental compositions were determined by NAA to investigate food pollution and nutrients. It is expected that the analysis results from these samples will contribute to the evaluation and improvement of the environment and evaluation of food safety.

Workshop Outline

- Period: March 2 to 5, 2014
- Venue: Bangkok (Thailand)
- Number of participants: 13
(Australia, Bangladesh, Indonesia, Japan, Korea, Mongolia, The Philippines, Thailand, Vietnam)



Open Seminar

At the workshop, reports and discussions were made on the progress and evaluation of NAA application using research reactors in the respective countries. This project is in the final year of the 4th phase that commenced in 2011, and NAA has been conducted on geochemical samples, food samples, and environmental samples, following on from the 3rd phase. The discussions covered various issues of the project, namely, the evaluation of three subprojects, identification of common interests among member countries and results of the preliminary survey, and the plan for next phase.

At an open seminar, presentations on the benefits, successful examples and roles of NAA were made by Japan, Thailand, and Australia. Reports were given on the strategic plan of a new research reactor in Thailand, and success story of FNCA in nuclear applications for sustainable development.

The participants visited the Thailand Institute of Nuclear Technology (TINT), including the Triga research reactor and radioisotope production facilities. During the visit, the participants received information on the state of facility utilization and the details of research being conducted.



Technical Visit to TINT

* Neutron activation analysis (NAA): A method to identify and quantify the elements in a sample by measuring the gamma rays emitted from the sample after irradiating it with neutrons.

Nuclear Safety Strengthening

Safety Management Systems for Nuclear Facilities Project

In order to ensure the safety of nuclear facilities, it is important to maintain a strong safety culture and excellent safety management system. This requires that the organization which owns or operates a nuclear facility continuously maintains and develops its Safety Management System in order to assure nuclear and radiological safety. This project aims at enhancement of safety in nuclear facilities, by promoting understanding on safety management systems through exchanging experiences and knowledge, and by conducting peer review*. This project was initiated by Australia in FY2009, replacing the former Nuclear Safety Culture (NSC) Project.

Recent Project Achievement

Based on IAEA Safety Guide GS-G-3.1 “Application of the Management System for Facilities and Activities” and the achievements of the former NSC project, the tool for assessment of safety systems has been developed. This tool is used for peer reviews and self-assessment of the safety management systems for nuclear facilities (mainly research reactors) in participating countries.

Three peer reviews using the present tool have been conducted to date as follows;

- G. A. Siwabessy multi-purpose reactor (RSG-GAS), National Nuclear Energy Agency (BATAN), Indonesia, October 13 to 15, 2010
 - Number of reviewer: 13
 - Good practices: 35, Comment: 11, Recommendation: 8
 - Improvement achieved:
 - Report on incident and near miss was promoted in the daily meeting.
 - Warning sign at the entrance of reactor pool and surrounding area, and additional exit route were added.
 - At the exit area, additional backup monitoring equipment was provided, etc.



Peer Review at RSG-GAS, Indonesia

- Reactor TRIGA PUSPATI (RTP), Malaysian Nuclear Agency (Nuclear Malaysia), Malaysia, November 23 to 25, 2011

- Number of reviewers: 11
- Good practices: 32, Comments: 22, Recommendations: 16
- Improvement achieved:
 - Sharing of documentation between different divisions was promoted through shared folders.
 - The radiation protection and health physics staff were included in the planning and execution of high dose activities or tasks, etc.



Peer Review at RTP, Malaysia

- HANARO reactor, Korea Atomic Energy Institute (KAERI), Korea, October 31 to November 2, 2012

- Number of reviewers: 13
- Good practices: 23, Comments: 19, Recommendations: 12
- Improvement achieved:
 - A representative from KAERI is supposed to report improvement achieved in response to recommendation in next workshop.



Peer Review at HANARO, Korea

Workshop Outline

The workshop scheduled to be held in Dhaka from December 1 to 5, 2013 was cancelled due to domestic situation in Bangladesh.

Radiation Safety and Radioactive Waste Management Project

This project aims at improving safety in handling radiation and radioactive wastes in the Asian region, by sharing information and knowledge on radiation safety and radioactive waste management acquired through experience.

Recent Project Achievement

The Consolidated Report on Radioactive Waste Management was first published in 2001 to organize and report on radioactive waste management in each country. In 2007, the new edition was published. In FY2011, the fourth phase (FY2011 to 2013) was started, and the draft of FNCA Consolidated Report on Radiation Safety was posted on the FNCA Website to improve mutual understanding among member countries on radiation safety. Also, the Radiation Safety and Radioactive Waste Management Newsletter has been published annually to deliver the latest information on radiation safety and radioactive waste management in each country. The newsletters are also made available on the FNCA Website so that all people interested in the project can have an access to the information anytime from anywhere in the world.

Workshop Outline

- Period: September 10 to 13, 2013
- Venue: Ulaanbaatar (Mongolia)
- Number of Participants: 16

(Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Malaysia, Mongolia, The Philippines, Thailand, Vietnam)

In the workshop, country reports were presented based on the Consolidated Report on Radiation Safety, which was drafted in 2011. The current information about the framework of safety regulations in the field of radiation protection and radiation safety management at nuclear power facilities was provided and the consolidated report was revised. Participating countries reported on public radiation exposure at normal times and during emergencies. The participant from Bangladesh reported that the draft of Bangladesh Atomic Energy Control Act was authorized in 2012 in preparation for the construction of Rooppur Nuclear Power Plant. Japan presented its newly established Nuclear Regulation Authority and the nuclear fuel removal plan at the Fukushima No. 1 Nuclear Power Plant. At the session dedicated to the treatment and disposal of radioactive waste at research institutions, the participants exchanged ideas and discussed transportation, treatment and storage of radioactive waste.

Since this is the final fiscal year of the current phase, the members evaluated the project and discussed how to plan the next year. The discussion concluded to choose “Progress of



Workshop

radiation safety of the general public during emergency and radioactive waste disposal situations” as the main themes. Specifically, emergency response and preparedness, radioactive waste disposal, decommissioning, disused radiation source management, transportation, storage of spent fuel, uranium mining, and NORM waste were suggested for the subjects of information exchange.

An open seminar on radiation safety management in FNCA-participating countries and RI analyses was held on the third day of the workshop at the National University of Mongolia. About 60 people, including students in the area, education professionals, researchers and radiation safety inspectors at nuclear-power-related institutions, joined the seminar. Speakers from Japan and Australia talked about the importance of radiation safety and protection, as well as the IAEA safety standards and the recommendations by the International Commission on Radiological Protection (ICRP). Other countries also made presentations on NORM residue management and facilities and systems for RI analyses. Mongolia, the host country of the workshop, made a presentation about different issues, including NORM management at uranium mines.

The workshop participants did a study tour to the Central Geological Laboratory of Mongolia, where about 200 employees are engaged in such tasks as measurement and semi-quantitative analysis of mineral resources, NORM analysis, and gemstone refining. After touring facilities equipped with the inductively coupled plasma mass spectrometry, wavelength-dispersive X-ray fluorescence spectrometer and microwave sample analysis equipment, the participants discussed the possible improvement of safety in radiation-related facilities in the laboratory as well as in each of their countries.



Technical Visit to Central Geological Laboratory

Nuclear Infrastructure Strengthening

Human Resources Development Project

Human resources should serve as an infrastructure for nuclear application. As a country that utilizes nuclear energy in the areas of electric power generation and R&D, and as a country that experienced a major nuclear power plant accident, Japan is engaged in supporting human resource development (HRD) for safer and appropriate nuclear application in Asian countries through this project. Specifically, the participants share knowledge and experience in the workshop and seek effective HRD strategies and international cooperation. The project operates the Asian Nuclear Training and Education Program (ANTEP)¹, an online database to collect and share information on status of HRD and current international cooperation, and seeks measures for mutual cooperation.

Recent Project Achievement

In the workshop for fiscal year 2011, the participants agreed that organizations related to nuclear HRD in each country must cooperate and function under the cooperative scheme if nuclear HRD is to be successful. This idea was submitted in the 13th Coordinators Meeting held in March 2012, and the “Recommendations on HRD” was submitted and adopted in this meeting. Each member country was encouraged to establish a national HRD network composed of nuclear HRD-related organizations. Since then, each member country has been working on the development of a national HRD network and designation of a national focal point (a single contact point for international HRD cooperation). In the 2013 workshop, the active engagements of all countries in these activities were recognized.

To collect information for the ANTEP, an annual survey was conducted on the HRD needs of each country, as well as on HRD programs available that a country can provide for other countries. The results of the survey were reflected in the research themes in the Nuclear Researchers Exchange Program (NREP)² by the Ministry of Education, Culture, Sports, Science and Technology (MEXT).



ANTEP Website

(<http://www.fnca.mext.go.jp/english/hrd/antep/index.html>)

Workshop Outline

- Period: September 17 to 19, 2013
- Venue: Tsuruga (Japan)
- Number of Participants: 22

(Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Malaysia, Mongolia, The Philippines, Thailand, Vietnam)

The open seminar held on the first day of the workshop was attended by about 60 people in the field. The themes of the seminar lectures included MEXT program supporting nuclear HRD in Asian countries and status of research and education at the Research Institute of Nuclear Engineering of the University of Fukui. Also, a presentation was given by Asian researchers who were visiting Japan to attend HRD program provided by MEXT.

The country reports included national policies and budgets prepared for nuclear HRD in each country, establishment of a national HRD network, and progress on designating a single contact point for international HRD cooperation. The participants pointed out that the government should lay down clear HRD plan for further development of basic knowledge and technology. In addition, reports were made on the survey results of ANTEP conducted in fiscal 2013 and on the implementation status of NREP.

Regarding future activities, HRD for nuclear communicators to improve public acceptance and stakeholder involvement in nuclear programs was discussed.

The participants visited the Wakasa Wan Energy Research Center, Tsuruga Training Center of Japan Atomic Power Company, and Fukui Atomic Information Center “At Home.”



Visit to Tsuruga Training Center of the Japan Atomic Power Company (JAPC)

*1 ANTEP: A database developed for matching the needs and existing HRD programs in order to facilitate effective and efficient HRD activities in FNCA member countries

*2 NREP: A project led by the MEXT to invite nuclear researchers in Asia to Japanese research institutes and universities. Its plan is determined in reference to the survey results of ANTEP.

Nuclear Security and Safeguards

Project

In order to promote peaceful use of nuclear power in Asian countries, it is important to improve and maintain nuclear safety, nuclear security^{*1} and safeguards^{*2}. This project aims at enhancing nuclear security and safeguards in the participating countries through having a shared awareness of the importance of nuclear security and safeguards, exchanging information, developing human resources, and carrying out research and development.

Recent Project Achievement

The workshops encouraged the participating countries to become more aware of the importance of nuclear security and safeguards and helped them to share information on the improvement and development of nuclear security and safeguards implementation in each participating country. At a workshop in 2012, an open seminar was held in conjunction with the Asia-Pacific Safeguards Network (APSN), a network of safeguard-related organizations in the Asia-Pacific region, led by Australia, in order to share experiences in the implementation of the IAEA Additional Protocol (AP)^{*3}. Information on the regulatory authorities for nuclear safety, safeguards, and security of nuclear material and radioactive sources has been collected, compiled and disseminated to participating countries. The aim is to find a method to enable better management of 3S (Safety, Safeguards, and Security) which is vital for peaceful use of nuclear energy.



Open Seminar held in conjunction with APSN

Workshop Outline

- Period: February 26 to 28, 2014
- Venue: Beijing (China)
- Number of Participants: 21

(Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, The Philippines, Thailand, Vietnam, IAEA)

In addition to the participants from 11 FNCA member countries, one representative from IAEA participated in the workshop. First, there was a presentation on the progress of activities for nuclear security and safeguards, including activities related to nuclear security culture and capacity building, in the respective countries. In the subsequent individual sessions, reports and discussions were conducted on the Report from the International Conference on Nuclear Security held in July 2013, and Safeguards, 2014-2017 Nuclear Security Plan, and State-Level Approach Implementation. Round-table discussions were then held on Human Resource Development, Good Practice in Enhancing Nuclear Security Culture, and 3S. In the session on nuclear security culture, based on the Chair's statement at the 14th FNCA Ministerial Level Meeting held in December 2013, it was proposed that initiatives and best practices of nuclear security culture development can be shared among FNCA member countries by utilizing the FNCA website, toward the development of nuclear security culture in the Asian region.



Participants of the Workshop



Workshop

*1 Nuclear security: Measures taken to prevent the threat of illegal use of nuclear materials and radioactive sources by terrorists, etc.

*2 Safeguards: Measures taken to ensure that nuclear materials are used only for peaceful purposes and not for nuclear weapons, etc.

*3 Additional Protocol: An agreement concluded between a country and the IAEA, complementary to the country's safeguards agreement with the IAEA

The 14th FNCA Coordinators Meeting (March 11-12, 2013, Tokyo)



Meeting Participants

The 14th FNCA Coordinators Meeting was held on March 11-12, 2013, in Tokyo, Japan, hosted by the Cabinet Office of Japan (CAO) and the Japan Atomic Energy Commission (JAEC), and co-hosted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan. The Meeting was attended by delegates from 12 member countries: Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, the Philippines, Thailand, Vietnam, and the IAEA/RCA.

●FNCA Project Activities

Each Project Leader reported on the ongoing 10 projects. Each of them reviewed the activities and presented the future plan. Challenge of each project and possible synergies among the projects were also discussed.

●Review and Plan of Study Panel on Infrastructure Development for Nuclear Power

The result of the FNCA 4th Panel Meeting held in July 2012 was reported. Topics such as “risk communication” and “stakeholders involvement” were introduced for the next meeting, and “development of small-medium sized reactor” was suggested as an additional topic. It was also agreed to hold next meeting in August 2013, Japan.

●Follow-up on Recommendations of the 13th Ministerial Level Meeting

Presentations and discussion on establishment of networks between the radiation application sectors and end-users were made. It was proposed to set the coordination committee including potential end-users and also pointed out that taking market needs into account during the planning phase was important for commercialization. Subsequently, presentations and discussion on the assessments of the socio-economic impact of radiation applications were made, and it was agreed to exchange information on the development of methodology and protocols based on the Malaysian experience.

●Collaboration with IAEA/RCA

RCA gave an overview of cooperation between RCA and FNCA, and made suggestions for enhancement of cooperation.

It was agreed that the FNCA should continue the cooperation with RCA in the specific projects on mutation breeding, electron accelerator application and radiation oncology for possible synergies and sharing experiences with non-FNCA RCA Member States.

●Future Policy on FNCA Activities

FNCA FY2012 outcomes and future plan for FY2013 were reviewed, and moving to next phase on Mutation Breeding Project and annual plan of meetings for FY2013 was accepted. Then FNCA Coordinators reviewed the project activities and concluded that the projects achieved good outcomes in FY2012 which benefit member countries.

The major points of Conclusion and Recommendations the Meeting agreed are as follows.

●Conclusion and Recommendations

- FNCA coordinators would confirm the setting up of national networks of radioisotope production and supply with appropriate chairmen.
- FNCA coordinators would support Project Leaders to identify appropriate partners of end-users for the analytical results of NAA in the fields of mineral exploration, marine environment contamination, and food contamination.
- The senior officials in charge of HRD will participate at the next HRD workshop to share experiences of HRD strategies and to define the direction of the FNCA HRD Project.
- Setting up a national steering committee for each project composed of FNCA Coordinator, Project Leader, relevant experts, officials and representatives of potential end-users was suggested.
- FNCA Coordinators organize an annual meeting of Project Leaders where the Coordinator shares the policy and direction of FNCA with Project Leaders, and Project Leaders share information of outcomes of the projects.
- It is encouraged expert(s), in addition to Project Leaders, to participate in Workshops through the support of national or institutes' travel funds in order to strengthen Project activities and to share information.
- Nomination of participants to Workshops by Coordinators should be carefully done in order to make Workshops fruitful and to strengthen Project implementation.



A scene of the Meeting

The 5th Panel Meeting of “Study Panel on the Approaches toward Infrastructure Development for Nuclear Power” (August 22 - 23, 2013, Tokyo)



A scene of the meeting

The 5th Panel Meeting of “Study Panel on the Approaches toward Infrastructure Development for Nuclear Power” was held on August 22-23, 2013, in Tokyo, Japan, hosted by the Cabinet Office of Japan (CAO) and the Japan Atomic Energy Commission (JAEC). The Meeting was attended by delegates from 11 member countries: Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, the Philippines, Thailand, and Vietnam.

●Current Situation and Future Prospects of TEPCO’s Fukushima Daiichi NPS and Efforts for Safety Improvement after the Accident

Ministry of Economy, Trade and Industry of Japan presented the roadmap for the future actions of defueling and decommission for the current status of Fukushima Daiichi NPS, and they also introduced new working group on self-regulatory actions by Operators for safety improvement after the accident. The Nuclear Regulation Authority of Japan introduced problems of nuclear regulation in pre-Fukushima era and key elements of the recently formulated new regulatory requirements. Japan Nuclear Safety Institute explained key activities for voluntary safety improvement.

●Development of Small and Medium Sized Reactor

Opportunities and challenges for economics, technology, and institutional aspect of small and medium sized reactor (SMR) were introduced by Japan and related activities for R&D of SMR were presented by member countries. A panel discussed the advantages of SMR and its effective use.

●Emergency Preparedness and Response

Japan introduced lessons learned and changes for emergency preparedness and response (EPR) made in Japan in light of Fukushima accident including law, institution and zoning. Potential areas of regional cooperation for EPR were indicated. Then member countries introduced their related activity for EPR and potential areas of regional cooperation were proposed. IAEA delivered a presentation on the Web meeting between meeting room in Tokyo and IAEA headquarter in Vienna which was the first trial at FNCA meetings. They explained that the Asian Nuclear Safety Network (ANSN) activities

currently focused on capacity building under various topical groups including EPR. During the panel discussion it was agreed that FNCA and ANSN put into writing potential areas of regional cooperation for EPR and possible framework/vehicle to materialize the proposed action information at an early time.

●Nuclear Security

The consultant, former section head for prevention in the Office of Nuclear Security of the IAEA lectured on the global security framework and importance of ratification of Convention on Physical Protection of Nuclear Material (CPPNM) amendment to upgrade international security level was emphasized. Member countries presented their related activity and challenges for nuclear security, and discussed regional cooperation for the one of issues on nuclear safety. It was pointed out that the existing project of FNCA on safeguards and nuclear security would serve this purpose. They also discussed the needs of the support and monitoring from international communities and organizations such as IAEA and FNCA on achieving security level before starting operation of nuclear power. Several points for consideration by newcomer countries

●Stakeholder Involvement

The meeting shared experiences and difficulties on stakeholder involvement in the member countries and Europe, and it was emphasized that face-to-face meeting under consensus approach and the strategy of series of public meetings starting from meetings in a small administrative unit were important.

●Future plan of study panel meeting

The presentation by an expert in financing discussed “Concerns Topics of the past study panels in this phase were overviewed and topics for next meeting were discussed. After prioritization, the meeting determined to pick up 1) SMR, 2) role of TSO and research institutes for countries launching nuclear program, 3) post-Fukushima situation, 4) stakeholder involvement, and 5) EPR including clinical response.



Site visit to Fukushima Daiichi Nuclear Power Station



Message from Dr. Sueo Machi, FNCA Coordinator of Japan

The 14th FNCA Ministerial Level Meeting was held in Tokyo 19 December 2013. Minister Ichita Yamamoto of Japan underlined at the opening speech that the FNCA is the unique and successful cooperation mechanism operated by the active participation of relevant Ministers of member countries. He also stated that Gov. of Japan considers the nuclear power is an important base power and restarts operation of existing nuclear power plant after the approval of the Nuclear Regulation Authority, in view of energy security and cost competitiveness.

Regarding nuclear power program, Chairman of Bangladesh Atomic Energy Commission stated the inauguration of construction of nuclear power station was held with the presence of the Prime Minister in Oct. 2013. Vice Minister of Ministry of Science and Technology of Vietnam said that 200 university students are studying nuclear engineering abroad preparing the construction and operation of first 4 nuclear power plants. Both China and Korea announced large expansion of nuclear power program in coming years.

National strategies were discussed in order to achieve commercial application of useful results of selected FNCA R/D project, such as radiation processing of natural polymers, biofertilizer and mutation breeding. It was agreed that national nuclear institutes implementing the projects should set up a coordination meeting participated with the sectors interested in the project outcome to share information and define the strategy approaching commercial application. Actions to be taken by the member stated following the agreement will enhance the commercial application of the results of selected FNCA projects.

Since nuclear security against terrorist attack is the important issue, the FNCA has initiated the Project on Nuclear Security and Safeguards in 2011 and strived to strengthen nuclear security and safeguards by sharing information and human resource development through the project. At the roundtable discussion, Mr. Vidal of IAEA advised that member countries should make self-assessment to develop its nuclear security culture by using IAEA tool. Japan is supporting Asian countries to build the nuclear security culture by the activities of ISCN of JAEA.

The FNCA activities in 2014 will be implemented through the active cooperation of member countries following the FNCA vision statement and the resolution adapted by the 14th Ministerial Level Meeting.

Outcomes of FNCA Activities

Manuals · Guidelines · Reports

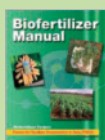
< Radiation Utilization Development >



Mutation Breeding Manual



Achievement Report for Research on Mutation Breeding Project



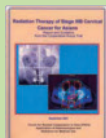
Biofertilizer Manual



FNCA Guideline on Development of Hydrogel and Oligosaccharides by Radiation Processing



Handbook in Brachytherapy Physics



Radiation Therapy of Stage IIIB Cervical Cancer for Asians

< Nuclear Safety Strengthening >



FNCA Safety Management System Project Tool for Self-Assessment/Peer Review



Task Group Reports and Consolidated Reports on Radioactive Waste Management/Radiation Safety

Commercialized Products



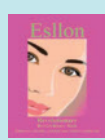
Biofertilizer Products (Malaysia)



Plant Growth Promoter (Vietnam)

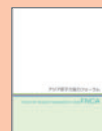


Hydrogel Wound Dressing (Korea)



Beauty Face Mask (Malaysia)

Brochures · Newsletters



FNCA Brochure



FNCA Newsletter



FNCA Biofertilizer Newsletter



Radiation Safety & Radioactive Waste Management Newsletter

Enrichment of Websites



Introduction & Reports for FNCA Activities on FNCA Website



Link with ANTEP Website



Electron Accelerators and Gamma-ray Irradiation Facilities in FNCA Countries

FNCA Activities in JFY 2013

Activity		Schedule	Host Country
The 14th Ministerial Level Meeting		December 19th , 2013	Japan
The 5th Panel Meeting of “Study Panel on the Approaches toward Infrastructure Development for Nuclear Power”		August 22-23rd , 2013	Japan
The 15th Coordinators Meeting		March 11-12th , 2014	Japan
Radiation Utilization Development	Mutation Breeding Workshop	March 4-7th , 2014	Indonesia
	Biofertilizer Workshop	November 18-21st , 2013	The Philippines
	Electron Accelerator Application Workshop	October 29- November 1st , 2013	Malaysia
	Radiation Oncology Workshop	November 19-22nd , 2013	Korea
Research Reactor Utilization Development	Research Reactor Network Workshop	September 24-27th , 2013	Kazakhstan
	Neutron Activation Analysis Workshop	March 2-5th, 2014	Thailand
Nuclear Safety Strengthening	Safety Management Systems for Nuclear Facilities Workshop	Cancellation	Bangladesh
	Radiation Safety and Radioactive Waste Management Workshop	September 10-13th , 2013	Mongolia
Nuclear Infrastructure Strengthening	Human Resources Development Workshop	September 17-19th , 2013	Japan
	Nuclear Security and Safeguards Workshop	February 26-28th, 2014	China

What is the Forum for Nuclear Cooperation in Asia (FNCA)?

Name

FNCA : Forum for Nuclear Cooperation in Asia

Participating Nations

Australia, Bangladesh, China, Indonesia, Japan, Kazakhstan, Korea, Malaysia, Mongolia, The Philippines, Thailand and Vietnam, IAEA (Observer)

Ministerial-Level Meeting

The ministerial-level representatives of each country holding jurisdiction over nuclear activities discuss cooperation measures and nuclear related policies. On the day before the ministerial-level meeting, the senior administrative officials meeting is to be held.

Coordinators Meeting

The Coordinators who are selected as a representative by each nation discuss several issues including introduction revision & abolishment, coordination and evaluation of cooperative projects.

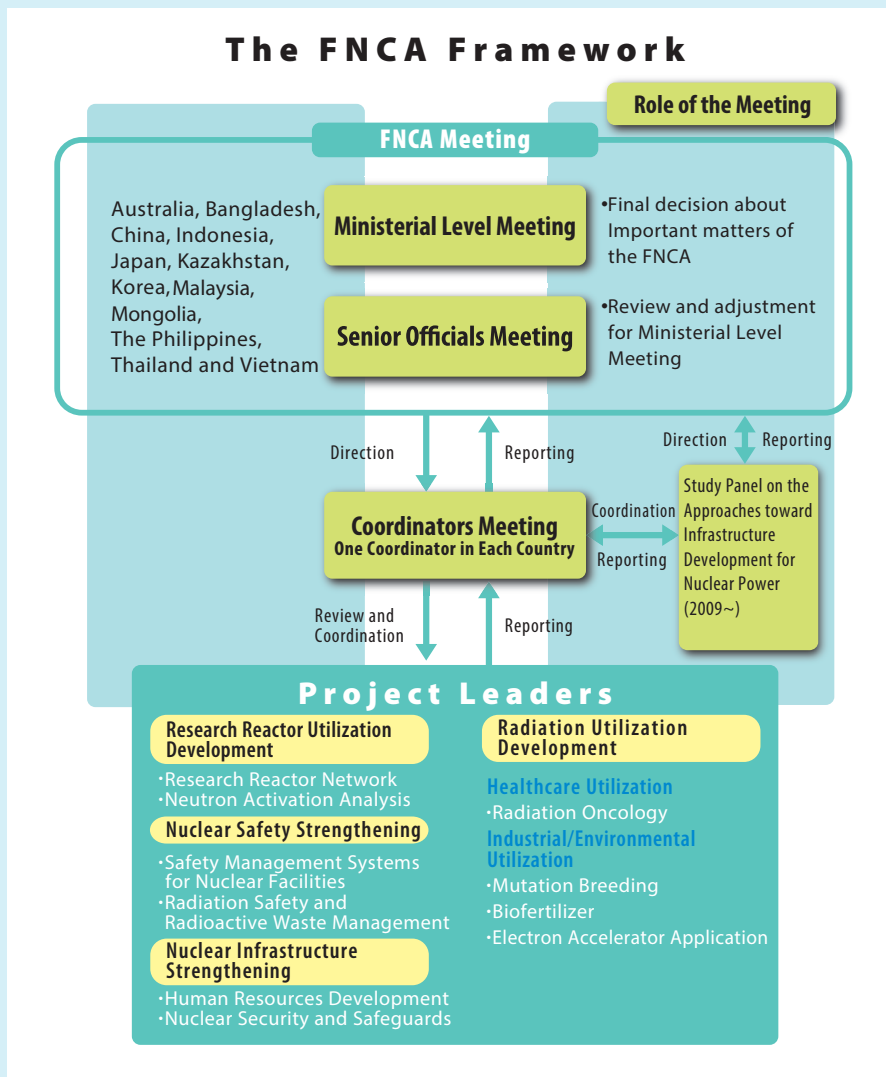
Panel Meeting

To examine & evaluate the role of nuclear energy, and also study problems related to the introduction of nuclear power generation. A new study panel on the Approaches toward Infrastructure Development for Nuclear Power started in 2009.

Project

Each FNCA participating nation holds workshops through post rotation to discuss activity programs.

*For further information: FNCA Website: <http://www.fnca.mext.go.jp/english/index.html>



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