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## Workshop on Radiation Safety & Radioactive Waste Management held on January 17-18, 2023, Japan and Online

FNCA 2022 Workshop on Radiation Safety and Radioactive Waste Management (RS&RWM) was held in Tokyo, Japan for two days from January 17 to 18, 2023 in a hybrid form. The workshop included 28 representatives who specialize in the radiation safety and radioactive waste management from 10 member countries: Australia, Bangladesh, Indonesia, Japan, Kazakhstan, Malaysia, Mongolia, The Philippines, Thailand and Vietnam.

The activity of 7th phase (from 2021 to 2023) of this project is focused on compiling a consolidated report on Naturally Occurring Radioactive Materials (NORM) and Technologically Enhanced Naturally Occurring Radioactive Material (TENORM). Participants in the workshop had a Question-and-Answer(Q&A) session and discussion for a draft version of consolidated report of each country.

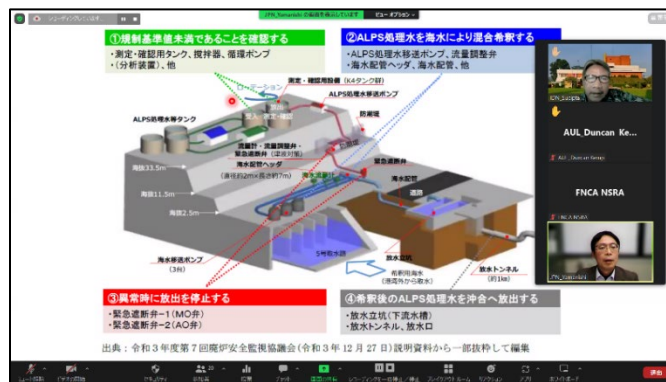
In the opening session, welcome remarks were delivered by Mr. Obata Ryoji, Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT), and Mr. Wada Tomoaki, FNCA Coordinator of Japan. Mr. Obata mentioned his respect for the representatives of the FNCA member countries for their participation and cooperation in FNCA activities even during the COVID-19 pandemic. Mr. Wada explained the FNCA Project Activities and outcomes of the 22nd Coordinators Meeting, which was held in June 2022.

After the opening session, Professor Toshiso Kosako, Project Leader of Japan, explained the problems with NORM and TENORM, which are expected to become a serious social problem in many Asian countries, and the workflow to compile the consolidated report.



During the session 3, participants presented their current situations and problems, as well as a framework of safety regulations on NORM and TENORM, which served as a draft version of the consolidated report.

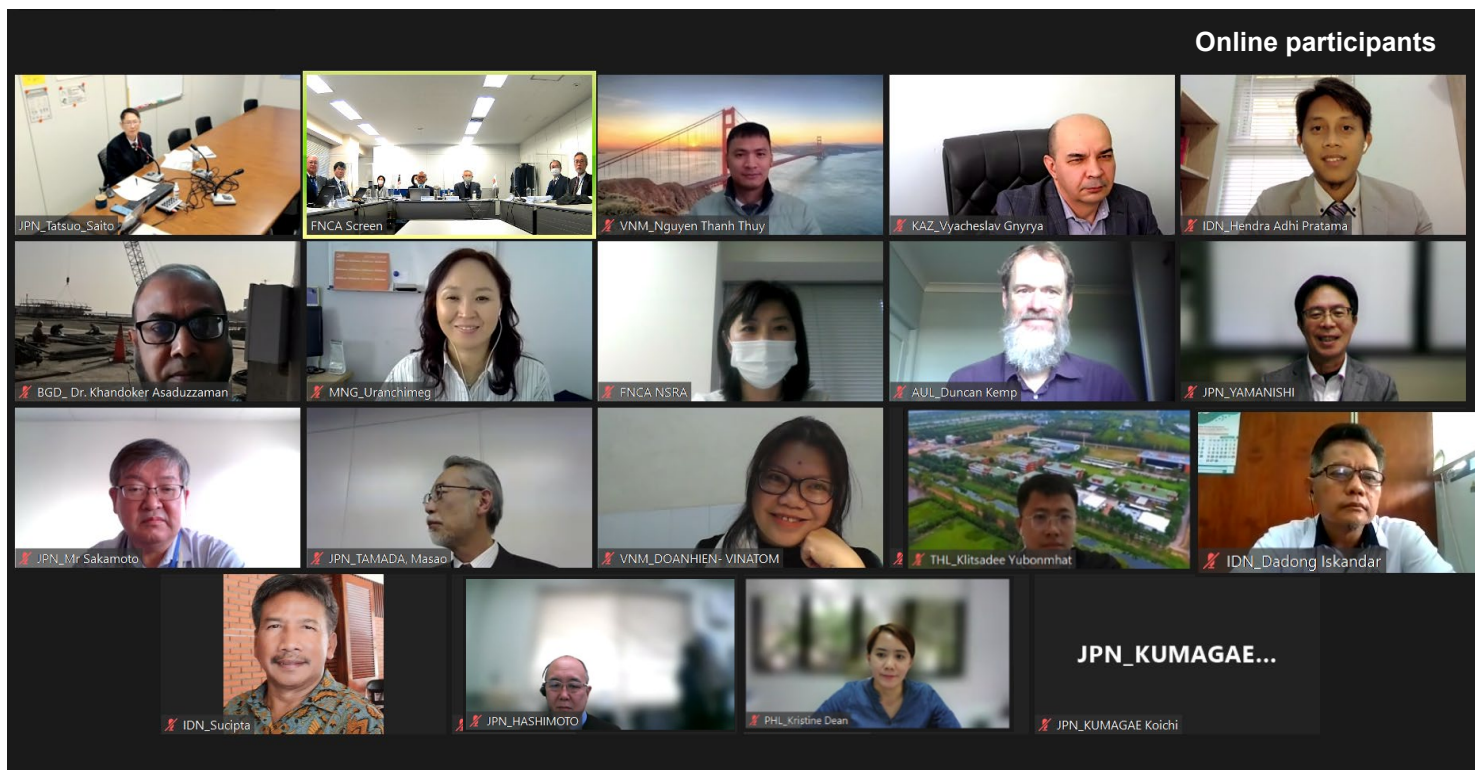
On the second day, there were two presentations from Japan in session 5. Dr. Hashimoto Makoto, Japan Atomic Energy Agency (JAEA) delivered a speech titled "International movement of NORM and TENORM". He explained the efforts of the IAEA, ICRP, European Commission (EC) and other international organizations related to the NORM and TENORM management. As regards environmental radiation, which is the theme of the next phase of this project, another speech titled "Environmental radiation related to Radiation Waste Management", was given by Prof. Yamanishi Hirokuni, Kindai University. The speech focused on the policy and report of Japanese government related to the discharge of the ALPS (multi-nuclide removal facility) treated water stored at TEPCO's Fukushima Daiichi nuclear power station, as well as the IAEA's review mission and the annual amount of discharge of tritium. This was followed by a Q&A session and discussion from Australia in alphabetical order. The participants



Discussion in session 5

from each country answered the questions that they have received via email after session 3 and also explained the progress of their consolidated report. Since NORM and TENORM pose very different situations and challenges to different countries, it is hoped that this workshop will help to deepen mutual understanding and establish or review systems in the member countries.

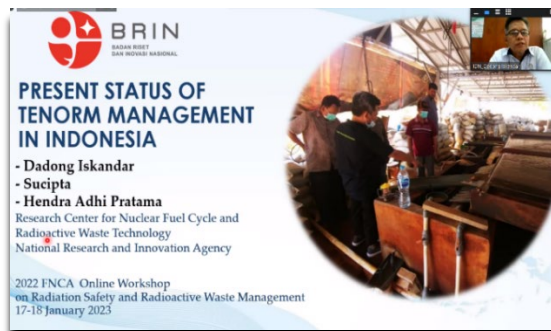
The FNCA 2023 workshop has been decided to be held in Malaysia in November 2023, where member countries will continue to work toward the completion of the consolidated report on NORM and TENORM. Summary of each presentation and comments can be found on the FNCA website.



## Online open seminar

Dr. Dadong Iskandar from National Research and Innovation Agency (BRIN), the FNCA RS&RWM Project member from Indonesia, made a presentation on TENORM Management at the RS&RWM workshop. His presentation has also been introduced as an online open seminar on the FNCA website, which can be accessed through the following link:

[https://www.fnca.mext.go.jp/english/rwm/e\\_ws\\_2022.html](https://www.fnca.mext.go.jp/english/rwm/e_ws_2022.html)



### - Summary -

In the recent years the activity related to NORM/TENORM Management in Indonesia has increased. In this report we will just describe the TENORM Management. The sources of TENORM in Indonesia are from mining and industry as tin mining and processing, oil and gas company, coal power generation, etc. The procedures of TENORM Management in Indonesia, in general, the company generated TENORM should make radiological study to know what kind of radiation protection should be applied. If there are any contaminated sites, they will ask to make a clean up for these sites. The TENORM residues/wastes would be stored at their own interim storage. Indonesia has no final disposal for the TENORM Wastes. In the Report we also describe regulatory infrastructure in Indonesia and also how it's implementations. The issues related to TENORM in Indonesia are: 1) The conflicting and inconsistent norms in some regulations in Indonesia, therefore the coordination among authorities is necessary to establish the national system of TENORM management in Indonesia; 2) Workers in Industry generated TENORM still have low knowledge of radiation protection; 3) Interim storage of TENORM residue/waste has a very limited areas with poor quality; 4) Indonesia has no a final disposal for TENORM waste.

## FNCA Activities in JFY2022

| Activity                                                      | Date                   | Venue               |
|---------------------------------------------------------------|------------------------|---------------------|
| The 22 <sup>nd</sup> Coordinators Meeting                     | June 28, 2022          | online              |
| Workshop on Radiation Safety and Radioactive Waste Management | January 17 to 18, 2023 | Japan and online    |
| The 23 <sup>rd</sup> Ministerial Level Meeting                | October 31, 2022       | Mongolia and online |
| 2022 Study Panel                                              | March 9, 2022          | online              |

For more details, please refer to the following FNCA website.

<https://www.fnca.mext.go.jp/english/index.html>

## Self-introduction of RS&RWM Project Leaders



**Mr. Duncan Kemp**  
Technical Director, ANSTO

### Australia

Mr. Duncan Kemp is the Technical Director, Radioactive Waste at the Australian Nuclear Science and Technology Organisation (ANSTO). He has been joining this project since 2017.



**Dr. Khandoker Asaduzzaman**  
Chief Scientific Officer,  
Bangladesh Atomic Energy  
Commission (BAEC)

### Bangladesh

Dr. Khandoker Asaduzzaman is a Chief Scientific Officer at Bangladesh Atomic Energy Commission (BAEC) with over 10 years of experience in radiation physics and radioactive waste management. He began working as a Scientist at Institute of Nuclear Science and Technology of BAEC in the early 2000's. His research focuses on environmental radiation monitoring, radiation protection and radioactive waste management. He has authored several peer-reviewed articles and has spoken at numerous symposia and conferences in home and abroad. He receives both the BSc and MSc degree in Applied Physics and Electronics from University of Rajshahi, Bangladesh and PhD in radiation physics from University of Malaya, Malaysia. His work over the past 9 years can be summarized as covering the following topics: Radioactive waste management, Radiation protection and safety, Inspection of facilities using radioactive sources, and Environmental radiation monitoring including NORM and TENORM.



**Dr. Syaiful Bakhri**  
Head of the Research Center  
for Nuclear Fuel Cycle and  
Radioactive Waste  
Technology,  
National Research and  
Innovation Agency (BRIN)

### Indonesia

Syaiful Bakhri currently serves as the Head of the Research Centre for Nuclear Fuel Cycle and Radioactive Waste Technology at the National Research and Innovation Agency (BRIN) and has previously held several key positions, including Acting Head of the Research and Technology Centre for Nuclear Fuels at BRIN in January 2022, Head of Reactor Technology and Safety Division (2015), and Head of Physics and Reactor Technology Division in 2017 at National Nuclear Energy Agency (BATAN).

Syaiful Bakhri has a wealth of experience in nuclear safety, having served as the vice chairman of the Safety Committee and the Coordinator of Periodic Safety Reviews for MPR GA-Siwabessy 30 MW. He has also been involved in various nuclear projects in Indonesia, such as the project manager for the Experimental Power Reactor (EPR) High-Temperature Gas Cooled Reactor of Indonesia. Syaiful Bakhri has contributed significantly to the international nuclear community, serving as the Executive Director of the Joint Laboratory on High-Temperature Gas Cooled Reactor at INET – Tsing Hua University, China – Indonesia, and member of Joint Working Group BRIN – Rosatom, and attending several FNCA and ANSN events.



**Prof. Kosako Toshiso**  
Professor Emeritus,  
The University of Tokyo

## Japan

Toshiso KOSAKO was born in Hiroshima in 1949. In 1977, he completed the doctoral course at the University of Tokyo, and received PhD. After working as an associate professor, and professor at the University of Tokyo, he has been professor emeritus at the University of Tokyo since 2015. His specialties include radiation protection, radiation measurement, dosimetry, radiation shielding, radioactive waste, and environmental radiation. His research activities include neutron spectroscopy, fast breeder reactor shielding, Hiroshima-Nagasaki atomic bomb dose assessment, Chernobyl reactor accident analysis, and Fukushima accident analysis. He has served as a member of the International Commission on Radiological Protection (ICRP-Com4), President of the Asian-Oceanian Association for Radiation Protection (AOARP), President of the Japanese Society of Health Physics, etc. He has received the Morgan Award from the Health Physics Society (US) and the three Minister awards from Ministries of Industry (MITI), Education (MEXT) and Environment (MOE).



**Mr. Vyacheslav Gnyrya**  
Deputy Director for Tests,  
National Nuclear Center

## Kazakhstan

Mr. Vyacheslav Gnyrya is the Deputy director for Tests, Institute of Atomic Energy of the National Nuclear Center of the Republic of Kazakhstan. He worked as a Chief Engineer of "Baikal-1" research reactor complex.



**Dr. Mohd Zaidi bin Ibrahim**  
Manager of the Waste  
Technology Development  
Centre,  
Malaysian Nuclear Agency

## Malaysia

Dr. Mohd Zaidi Ibrahim is a Senior Research Officer at the Malaysian Nuclear Agency, Bangi, Malaysia. He holds a Ph.D. from the Science University of Malaysia in the field of Environmental Chemistry. He joined the Malaysian Nuclear Agency in 2002. Currently, he is the manager of the Waste Technology Development Center at the Malaysian Nuclear Agency. The Waste Technology Development Center is the national radioactive waste management center in Malaysia, which has been entrusted by the government for the management of radioactive waste throughout the country.



**Dr. Uranchimeg Batdelger**

Senior Officer,  
The Executive Office of  
Nuclear Energy Commission

## Mongolia

I graduated from the National University of Mongolia with a BA in Chemistry, Nuclear Technology in MA, and from University of Tsukuba in Japan with a MSc. I graduated in 2006, I worked as a chemist with a private oil company for five years. Since 2010, I have worked as an analyst and technical manager then at the Radiation Control Laboratory, Nuclear Energy Agency (formerly) for five years. In amendments to the Nuclear Energy Law in 2015, I have been working as a senior officer in charge of radioactive waste management activities at Nuclear Safety and Security Department, the Executive Office Nuclear Energy Commission.



**Ms. Kristine Marie Romallosa Dean**

Supervising Science Research  
Specialist, Philippine Nuclear  
Research Institute (PNRI)

## Philippines

Ms. Kristine Marie Romallosa Dean is the Head of the Radiation Protection Services Section of the Philippine Nuclear Research Institute. The Section provides calibration, dosimetry and radiation control services to radiation and nuclear facilities. Her group also operates and maintains the Secondary Standards Dosimetry Laboratory and the Radioactive Waste Management Facility. Her work is in the area of radiation protection, safety and dosimetry. She has an educational background in Physics with a Master's Degree in Physics from the University of the Philippines. Her research portfolio is in neutron dosimetry, radiation protection and radiation measurements, among others.



**Dr. Klitsadee Yubonmhat**

Nuclear Scientist,  
Thailand Institute of Nuclear  
Technology (TINT)

## Thailand

Klitsadee Yubonmhat received his Ph.D. in physics from Department of Physics, Khon Kaen University, Khon Kaen, Thailand, in 2019. He is currently working as a Nuclear Scientist at Thailand Institute of Nuclear Technology, Bangkok, Thailand. His research interests include nuclear magnetic resonance, radioactive waste management. He is now studying on leaching of Cs-137 from cement-based waste forms. Mathematical models are being used for determining the controlling leaching mechanisms. He is also studying the development of radioactive waste disposal facility. The site selection in the area survey stage is being conducted.



**Mr. Nguyen Thanh Thuy**

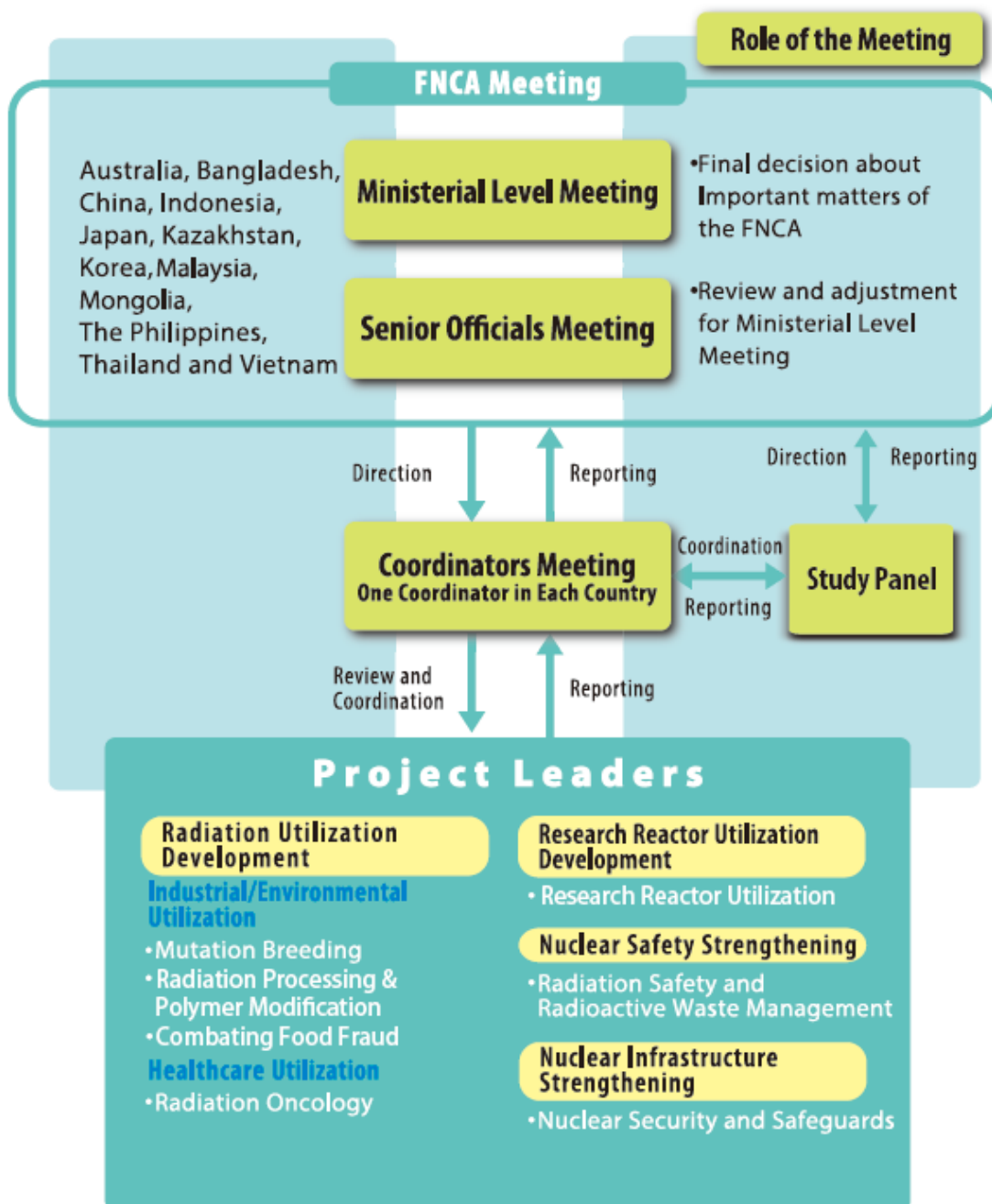
Executive Deputy Director,  
Radioactive Waste Management  
Center, Vietnam Atomic Energy  
Institute (VINATOM)

## Vietnam

Main research directions are as follows;

1. Research on the total extraction of rare earth elements from rare earth ore and ore concentrate in Vietnam, as well as the production of rare earth metals through metallothermic reduction and electrolysis methods.
2. Research on technologies for the treatment and management of radioactive waste generated from the processing of radioactive ore, such as uranium ore, placer, monazite, and xenotime.

## The FNCA Framework



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