

RCARO Director's Report on the Progress of the 2023 Work Plan

The 45th RCA NRM decisions relevant to the RCARO 2023 Work Plan:

The Meeting took note of the report on the activities of RCARO and approved its work plan for 2023. The Meeting appreciated the RCARO for its continuous contributions to the RCA and the Government of Korea for its generous support to the RCARO in the last twenty years.

The Meeting recommended the RCARO consider holding an introductory workshop and developing a comprehensive booklet for the RCA NRs to familiarize with their roles and responsibilities.

Proposed action for NRs' consideration:

- Take note of the progress made by the RCARO on its work plan for 2023.
- Endorse the remaining activities planned for the rest of the year.
- Review the Handbook and provide their comments within 2 weeks.

1. Taking on the Role of a Think-Tank for the RCA

1.1 Establishment of a Policy and Information Centre

At the International Symposium held in celebration of its 20th Anniversary last December, the RCARO announced its future vision to bring sustainable, innovative and inclusive growth to the region, and to serve as a think-tank for the RCA.

The RCARO was able to secure an additional budget from the Korean government and established the “Policy & Information Centre” to provide better and more effective support to the RCA.

With the support of this centre, the RCARO submitted a concept paper to establish and operate a Network of National Nuclear Research Institutes (NNRIs) of the RCA GPs to the 45th RCA NRM for review and consideration by the RCA NRs.

RCARO will conduct a comprehensive survey on the RCA to better understand the needs of the region. Included in the survey will be questionnaire on overall RCA management and operation, future national/regional priorities and needs, NNRI information, needs on RCA promotion and partnerships. By giving a diagnostic snapshot of the region, the survey will provide a good basis for the RCA to evolve to be a relevant, timely and useful regional mechanism for multilateral cooperation.

Further, with the support of the new center, RCARO is considering to undertake a policy study on strategic expansion of partnerships and develop details profiles of potential partners including international, regional and national organizations. In this way, RCARO plans to further explore strategic and innovative approaches to identify potential partners in the future.

1.2 Support to the RCA Chair and Policy Meetings

RCARO assisted the IAEA and the RCA Chair in the preparation of the 45th RCA NRM and the 52nd RCA GCM and supported the preparation of the meeting agenda and background documents. RCARO also participated in the RCA Chairs’ Committee meetings in March and July, and provided its views on the RCA policy issues.

The second amendment to the “Practical Arrangements between the IAEA and the RCARO on Cooperation in the Performance of Secretariat Duties under the 2017 RCA” will be signed in September to continue effective cooperation in the performance of secretariat functions for the RCA.

The RCARO will expand its support to the RCA GPs, the RCA WGs/Committees, the RCA Chair and the Chairs’ Committee, and RCA NR meetings by providing resource materials and conducting policy analysis. In order to serve as the think-tank of the RCA, the RCARO will develop plans to better collect and utilize the information and data from the RCA and conduct various assessments and studies.

1.3 Development of a Handbook on RCA and RCA GOR

During the 45th RCA NRM, it was recommended that the RCARO consider holding an introductory workshop and developing a comprehensive booklet for the RCA NRs to familiarize them with their roles and responsibilities.

In response to the recommendation of the 45th RCA NRM, the RCARO drafted a handy guidebook on RCA and RCA GOR for the RCA stakeholders. It provides comprehensive information on the RCA as a whole and on the specifics of key RCA procedures.

In addition, as recommended by the 45th RCA NRM, the RCARO plans to hold a workshop for the RCA NRs (physical or virtual) in 2024 and provide them with a briefing on the overall RCA and its procedures.

2. Enhancing and Exploring Partnerships with Regional/International Organizations

2.1 Developing a Partnership Project/Activity with Relevant Organizations

The RCARO is focusing its efforts on partnerships with regional/international organizations to expand the RCA and provide more opportunities for the GPs.

2.1.1 Development of a Follow-up Project/Activity on EBeam Technology

Based on the successful event with the US DOE, “Workshop on Accelerating the Adoption of EBeam/X-ray Technologies in Asia and the Pacific” in November 2022, the RCARO developed the concept for the new partnership project with the US DOE which was endorsed by the 36th RCARO SAC and the 45th RCA NRM. The final project design was endorsed by the RCA via electronic communications in September 2023.

RCA-DOE Partnership Project: Supporting the Adoption of Electron Beam Technology and its Applications in Areas of Food and Agriculture, Industry, Human Health and Environment Treatment	
<ul style="list-style-type: none"> • Countries: RCA Government Parties in Asia-Pacific Region • Project Period: Five Years (2024-2028) <ul style="list-style-type: none"> - Start Date: January 2024 - End Date: December 2028 • Total Estimated Budget: \$2,403,265 <ul style="list-style-type: none"> - NNSA ORS: \$2,059,265 - RCARO: \$344,000 • Activities: Meetings, Workshops, Training Courses, Establishment of Data-base, Expert Missions, etc. 	

This project will run for five years (2024-2028) and aims to improve the quality of the environment and living conditions in the Asia-Pacific region by supporting the establishment of the eBeam infrastructure and facilitating of its applications.

A project coordination meeting is planned to be held in December this year as a kick-off. Prior to this, GPs will be requested to send the “Project Participation Form” to the RCARO to show their intention to participate in the project. During the meeting, the detailed work plan including the dates, venue and content of each activity for the next five years will be discussed and confirmed.

2.2 Implementation of the RCARO/ASEANTOM Project

The RCARO has been implementing a partnership project with the ASEANTOM (ASEAN Network of Regulatory Bodies on Atomic Energy) entitled “Enhancing emergency preparedness and response capabilities through building technical capacity in radiation monitoring and dose assessment following the nuclear and radiological emergencies” since 2020.

Led by the OAP (Office of Atoms for Peace) of Thailand and KRISS (Korea Research Institute of Standards and Science), 10 ASEAN countries participate in the project.

*ASEAN: Association of Southeast Asian Nations: INS, KAM, LAO, MAL, MYA, PHI, SIN, THA, VIE, Brunei

2.2.1 Development of Educational Materials

According to the work plan, the RCARO, in collaboration with KRISS, developed three visual manuals and two handbooks to enhance the EPR capabilities of the region. These materials are expected to contribute to the promotion of accurate and rapid radiation monitoring and the dissemination of harmonized approaches across the region.

Visual Materials

- Radioactivity analysis of gamma-emitting radionuclides of environmental samples in a nuclear or radiological emergency (<https://youtu.be/1GekRk1jW70>)
- Calibration of a liquid scintillation counter for measuring tritium of environmental samples in a nuclear or radiological emergency (<https://youtu.be/e4l2dyHqj-w>)
- Tritium radioactivity analysis of environmental samples in a nuclear or radiological emergency (<https://youtu.be/a70DiQIQfR4>)
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Handbooks

- Radioactivity analysis of gamma-emitting radionuclides of environmental samples in a nuclear or radiological emergency
- Radioactivity analysis of beta-emitting radionuclides of environmental samples in a nuclear or radiological emergency

In addition, the RCARO participated in the 10th Annual Meeting of ASEANTOM in August and presented on the progress of the project.

2.2.2 Implementation of Regional Training Courses

Two regional training courses were conducted in 2023. An online training course entitled “Online Training Course on Enhancing EPR Capabilities in ASEAN Region in Radiation Monitoring and Dose Assessment” was held in February 2023 via the RCA E-CAMPUS, attended by 48 trainees from 6 countries.

The Regional Training Course on Enhancing Technical Capabilities on Radioactivity Measurements for Environmental Radiation Monitoring during Radiation Emergencies was held in August, in Daejeon, Korea, in cooperation with KRISS. This course provided the participants with theoretical and advanced knowledge on radiation monitoring as well as hands-on training to improve on-site capabilities in the event of radiological accidents. A total of 14 participants from 6 ASEAN countries working in regulatory bodies, technical support organizations and/or relevant competent authorities were trained.

2.2.3 Holding a Project Review Meeting

The RCARO will hold a mid-term review meeting in Q4 2023, to which the NPCs of the project will be invited. A technical workshop will be held in conjunction with the meeting to share technical expertise and issues/trends on radiation monitoring and dose assessment.

2.3 Implementation of a Joint Workshop with the ARCCNM

Since 2008, the RCARO has been supporting the RCA/ARCCNM workshop to train nuclear medicine physicians and scientists in developing and less developed Asian countries and to further promote regional cooperation for the advancement of nuclear medicine in these countries.

The RCARO will support the trainees participating in the training in cooperation with the Asia Regional Cooperative Council for Nuclear Medicine (ARCCNM) for one week in early November, in Korea to foster regional cooperation for the promotion of nuclear medicine in Asian countries, particularly in developing and less developed countries. It will provide an opportunity for young nuclear medicine professionals to present selected papers and receive training in the latest advances in nuclear medicine.

2.4 Participation in the FNCA Coordinators Meeting

On behalf of the RCA, the RCARO has been participating in the FNCA Coordinators Meeting to present the achievements of the RCA and promote cooperation between the RCA and the FNCA.

Representing the RCA, the RCARO participated in the 23rd Coordinators Meeting of the Forum for Nuclear Cooperation in Asia in April, and delivered a presentation on the RCA activities and the progress of the RCA-FNCA cooperative activities.

3. Expanding Support for the Benefit of the Government Parties

3.1 Implementation of RAS9092

RAS9092 on “Strengthening the Capacity to Respond to Radiological Emergencies of Category II and III Facilities in the Asia-Pacific region” was developed by the RCARO under the IAEA TC Programme. It aims to transfer knowledge and technology in establishing adequate emergency preparedness and response procedures for category II and III facilities, using a graded approach. Funded by the Korean Government, the project is to be implemented for five years from 2020 to 2024, with an extension of one year as decided at the project coordination meeting in 2020 due to the difficulties in undertaking the planned activities resulting from the COVID-19 pandemic.

Fifteen (15) GPs, with ROK as the lead country, participate in the project: AUL, BGD, CAM, IND, INS, MAL, MON, MYA, NEP, PAK, PHI, SIN, THA and VIE.

3.1.1 Implementation of a Mid-Term Review Meeting

The mid-term review meeting was held in Malaysia in February 2023 to report on and review the progress of the project at the national and regional levels, and to discuss and agree on follow-up and future activities. It was attended by the LCC and NPCs from 14 countries and experts from the IAEA, and it was noted that the project was on track despite the pandemic situation of Covid-19 and its impact on the work plan.

3.1.2 Submission of the Progress Report

The Project Progress Assessment Report (PPAR) will be submitted to the IAEA in a timely manner, integrating the national reports received from the NPCs of the project.

3.2 Implementation of Research Projects

3.2.1. Implementation of RCARP02 on Air Quality and Environmental Impact Assessment of Industrial Activities in the Region

The 2nd phase of the project is being implemented with the aim of improving the quality of the environment by providing appropriate pollutant data to researchers and relevant stakeholders. Eleven (11) GPs participate in the project: AUL, NZE, ROK as Agreement Holders and CPR, INS, MAL, MON, NEP, PAK, THA and VIE as Contract Holders.

According to the work plan, the Research Coordination Meeting was held in May, inviting Chief Scientific Investigators (CSIs) from the participating countries, Technical Officers and experts, to review and assess the project progress and discuss the work plan for 2023. The meeting concluded that, despite some delays caused by the COVID-19 pandemic, the project was on track to meet the project performance indicators set at the beginning of the project.

In conjunction with the meeting, a Technical Workshop on Nuclear Analytical Techniques for Environmental Pollution Monitoring and Impact Assessment was held to share knowledge and experiences on the latest R&D trends, success stories and emerging challenges.

In the fourth quarter of 2023, CSIs will be requested to submit annual/final progress reports for review by the RRC. Achievement report will be prepared by integrating the result/output of the project at national and regional level.

3.2.2. Implementation of RCARP03 on Closing the Gap in Access to Radiotherapy in RCA Government Parties

With the aim of improving cancer planning and scaling up radiotherapy services by providing evidence-based information on the radiotherapy services, the project was launched in 2022 and will run for three years until 2024.

Eight (8) GPs participate in the project: AUL, PHI, ROK as Agreement Holders and INS, MAL, MON, THA and VIE as Contract Holders.

The Research Coordination Meeting was held in May to which Chief Scientific Investigators (CSIs) from the participating countries, Technical Officers and experts were invited to review the project progress and discuss the work plan for 2023-2024. The meeting recognized the importance of bringing the project results to the attention of policy makers for building new radiotherapy centres in the region, and agreed to produce an achievement report summarizing the project outcomes and achievements.

In cooperation with the AUL CSI, TO and an invited expert, a Technical Workshop on Cancer Problem and Radiotherapy Utilization in Asia & Estimating Core Investment required was held with the meeting. Practical sessions on 1) Calculation of the radiotherapy utilization rate 2) Estimation of core investment required for radiotherapy were conducted to analyze the gap in the radiotherapy services in the region.

In the fourth quarter of 2023, CSIs will be requested to submit annual progress reports for review by the RRC. Based on the RRC's review, the RCARO will make the necessary financial arrangements for the continuation of the research in the participating countries in due course.

3.2.3. Initiation of a New R&D Programme

Aiming to meet the needs of the GPs for R&D to address regional problems through nuclear science and technology and to supplement the RCA Programme, the RCARO has been implementing research projects since 2018. Through the implementation of research projects, the RCARO has found a strong demand from the region in the field of collaborative R&D, and has therefore made efforts to find ways to expand the research component in the RCA.

As part of efforts to increase the scale of the research component, the RCARO has submitted a proposal to the Korean government in 2022 and secured additional funding to further expand R&D in the use of nuclear technology. This year, the Korean Research Foundation is reviewing the two project concepts for the research;

- Development of an AI-based Automatic Detection Programme and Critical Technology Elements for Portable X-ray Diagnostic Devices
- Collaborative Research and Technical Support for Water Purification Using E-beam Technology

Two project concepts will follow the design process throughout the year and will be launched and implemented according to the work plans.

As RCARP02 is completed this year, RCARO will conduct an impact analysis of RP01 and RP02 to review the progress and achievements made under this research framework. Reflecting lessons learned from this project and continued needs of the GPs, RCARO will launch the process for a new RP subject to the budget availability in 2024.

4. Provision of Information Service and RCA Promotion

4.1 Providing RCA information through the Integrated Information System

In 2022, the RCARO reformed the website and launched the “Integrated Information System”. The system consists of the RCA website for general information about the RCA, RCA E-Campus for online education and training, ROEM for the management of the RCARO projects/activities and DATA-HUB as an archive of information and data related to nuclear science and technology in the region.

In accordance with the recommendation of the 41st NRM to upload the RCA project documents on the RCA website, RCARO has continued to collect and update information and documents on the RCA meetings, projects and news. The information and documents include the 45th NRM, virtual meeting of NRs, pre-concept documents for the 2026-2027 RCA Programme and Working Group Meetings.

For a more effective flow of information, the second amendment to the “Practical Arrangements between the IAEA and the RCARO on Cooperation in the Performance of Secretariat Duties under the 2017 RCA” includes a new clause for the RCARO to receive documents and materials resulting from RCA projects and activities from the IAEA for archiving on the RCA website. In close coordination with the IAEA, the PAC and the LCCs/NPCs, the RCARO will continue to collect all information and documents related to the RCA programme in order to provide a high quality information service to the RCA. In addition, as approved by the 45th RCA NRM, the RCARO will provide a platform for the submission of the project reports and related documents.

To facilitate one of the functions of the system, the Data-Hub, information and data on nuclear science and technology in the RCA region will be collected, which is expected to be a valuable resource platform for setting up directions and strategies for the RCA as well as designing future projects. The network of information agents will be fully utilized to collect open-source national documents, such as

recent trend reports, status of participation in TC projects, list/details of nuclear institutes and contact of points, and available laws and regulations. The Data Hub will also serve as an online forum for the RCA stakeholders to freely upload and exchange ideas and opinions on possible cooperative activities/projects under the RCA.

4.2. Publication of the Newsletters

A meeting of the Editorial Advisors and RCARO was held in January 2023 to identify the topics and content of the 2023 Newsletter. A provisional plan was set for the 2023 issues.

According to the plan, RCARO published the 4th and 5th issues of the RCA Newsletter, in May and September respectively. The newsletters included sketches of key events such as the 20th anniversary of the RCARO and various featured articles by the GPs.

In cooperation with the Editorial Advisors and the RCARO SAC, the RCARO will continue to publish the 6th issue in Q4.

4.3. Participation in Regional/International Events

The RCARO participated in the 15th Vietnam Conference on Nuclear Science and Technology (VINANST-15) held in August, and showcased posters on the RCA and its 50 years of achievements at the event. The RCARO also participated in various domestic events in Korea to increase its visibility, including the Korea Nuclear Society Conference held in May.

4.4. Reformation of the Framework for Promotional Activities

In recent years, the RCARO has implemented diverse promotional activities such as participation in regional/international conferences, holding RCA exhibitions on special occasions, RCA expert support programme, operation of the RCA website, publication of promotional materials (RCA brochure, success stories and newsletter) and production of RCA promotional videos.

In order to promote the RCA more systematically and effectively within and outside the region, the RCARO plans to conduct a review of the effectiveness and impact of various promotional activities and to set a strategy/direction and formulate an appropriate mechanism for effective promotion of the RCA. Relevant experts from the region will be invited to this discussion early next year.

5. Assistance to the Government Parties in Human Resources Development

5.1. Capacity Building through the Korean Institutes/Universities

5.1.1. Support for the Master's Degree Programmes

With the aim of assisting the Government Parties in capacity building in the field of nuclear science and technology, the RCARO has been implementing the Master's Degree Programmes.

Under the Master's Degree Programme of the RCARO, one student (SRL) from KAIST and five students (MON, THA, INS (2), PHI) from KINGS have been newly granted with scholarships. Two students from KINGS completed a summer internship at the RCARO.

*KINGS: KEPCO International Nuclear Graduate School

KAIST: Korea Advanced Institute of Science and Technology

In addition, aiming to assist the GPs in capacity building in nuclear science and technology, the RCARO is planning to establish a new degree course of study in various fields of nuclear science and technology in cooperation with the University of Science and Technology (UST), a university of several national research institutes in Korea, commencing from the spring semester of 2024. It will be a Masters and PhD course and a maximum of ten students will benefit from the course, subject to the budget availability. The GPs will be invited to recommend appropriate candidates for the course.

5.1.2. Implementing Capacity Building Activities on Radiation Technology

The RCARO has been implementing regional training courses in various fields of radiation technology in cooperation with Korean institutes.

Under the Project on “Enhancing Capability for Developing, Using and Maintaining Radiation Equipment”, the RCARO hosted the Workshop from 7 to 9 March 2023, inviting 12 participants from 6 countries. The workshop provided knowledge and know-how on the use and maintenance of various radiation equipment and facilities. The participants were divided into sub-groups according to the equipment type and participated in site visits to Korean institutes.

Based on the results and discussions during the workshop, the RCARO hosted two expert missions to the Philippines and Thailand. The dispatched experts participated in policy meetings and delivered theoretical lectures at national workshops. On-site consultations were conducted at the facilities to respond directly to the pressing issues and identify the best solutions.

5.2. Provision of Online Training through the RCA E-Campus

The RCARO has been operating an e-learning platform on the RCA website and has developed a number of e-learning modules to provide extended learning opportunities to RCA stakeholders.

The RCARO is currently setting up a plan to reform the RCA E-CAMPUS to provide a comprehensive course on radiation applications. Scientific visits/on-site training will be combined with the online course to provide a wide range of learning opportunities for the RCA professionals. Engaging experts from relevant institutes and universities, modules in different fields and levels will be developed to contribute to the strengthening of professional human resources in the RCA.

5.3. RCARO Fellowship Programme

The RCARO Fellowship Programme was postponed in 2020 and 2021 due to the COVID-19 pandemic. As the situation has been resolved, fellows from Cambodia, Pakistan, and Laos were invited for two months respectively from November 2022, and contributed to the implementation of various RCARO cooperative activities.