

## **Report of the Director of the RCARO**

### **Background**

The procedure for evaluation of the performance of DIR-RCARO and an annual work plan stipulated in RCA Guidelines and Operating Rules (GOR) annex 4 is as follows:

- (a) The DIR-RCARO should prepare a draft annual work plan based on the RCA GOR, addressing all aspects of his/her roles and responsibilities with targets, milestones and measurable performance indicators (PIs) for each aspect of activities, and submit it to the RCARO SAC by 1 January each year.
- (b) The draft work plan should be negotiated and agreed between the members of SAC and the DIR-RCARO.
- (c) An annual work plan should be agreed upon by 1 February with finalized PIs and targets/milestones for each aspect of activities therein.
- (d) The annual work plan is subject to a mid-term review by the SAC. The DIR-RCARO should inform the SAC if there are major items with the potential to affect the implementation of the agreed annual work plan. The SAC should provide its reviews and agree on any adjustment to the annual work plan. The mid-term review may be done in the month of July or otherwise scheduled between the DIR-RCARO and SAC.
- (e) The DIR-RCARO should prepare the report on his/her performance in fulfilling the agreed work plan, and submit it to the SAC by 1 January of the following year for evaluation.
- (f) The SAC will assess the annual report through electronic interactions with the DIR-RCARO, and submit its report to the Regional NRM for consideration.

### **Actions taken**

In accordance with the RCA GOR, the DIR-RCARO prepared the report on his performance in 2023 and a work plan for the year 2024 and submitted them to the SAC at the end of December 2023.

### **Proposed Action**

The NRM may take note of the report on the RCARO's work performance in 2023 and a work plan for 2024.

# **RCARO 2023 Work Performance**

## **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 assisted the IAEA Secretariat, the RCA WGs/Committees, the RCA Chair and the Committee of Chairs, and the RCA NR meetings in providing resource materials and conducting policy analysis.

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” was signed in September to continue effective cooperation in the performance of secretariat functions for the RCA.

### **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. In cooperation with the IAEA and GPs, RCARO prepared the 2022 RCA Annual Report providing information on the implementation of the RCA Programme, key policy decisions of the NR meetings and achievements of the non-technical activities, and reported to the 45th RCA NRM for approval.

RCARO also participated in the RCA Chairs’ Committee meetings in March and July, and provided its views on the RCA policy issues.

### **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. Reflecting the comments from the NRs, the RCARO will prepare a final version and distribute it to the NRs and relevant stakeholders for their use.

In addition, the RCARO reported to the 52nd RCA GCM on its plans to organize a workshop for the RCA NRs in 2024.

## **2. Enhancing and Exploring Partnerships with Regional/International Organizations**

### **2.1 Development of a Partnership Project/Activity with Relevant Organizations**

The RCARO continued its efforts to develop partnerships with regional/international organizations in order to expand the RCA and provide more opportunities for the GPs.

Taking note of the recommendation of the 32nd RCARO SAC to seek possibilities for a follow-up activity/project to the RCA/UNOSSC project for continued support to the region, RCARO has explored opportunities for partnerships with other institutes/organizations for the development of a follow-up project on EBeam technology.

#### **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 communication in September 2023.

<b>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</b>	
<ul style="list-style-type: none"> <li>• Objective: to improve the quality of environment and living conditions of the Asia-Pacific region through supporting the eBeam infrastructure building and facilitation of its applications</li> <li>• Countries: RCA Government Parties in Asia-Pacific Region</li> <li>• Project Period: Five Years (2024-2028) <ul style="list-style-type: none"> <li>- Start Date: January 2024</li> <li>- End Date: December 2028</li> </ul> </li> <li>• Total Estimated Budget: \$2,403,265 <ul style="list-style-type: none"> <li>- NNSA ORS: \$2,059,265</li> <li>- RCARO: \$344,000</li> </ul> </li> <li>• Activities: Meetings, Workshops, Training Courses, Establishment of Data-base, Expert Missions, etc.</li> </ul>	

The First Project Coordination Meeting was held in Bangkok, Thailand, on 12-15 December 2023, with more than eighty (80) participants, including the representatives from the RCA Regional Office, National Project Coordinators of twenty-one (21) RCA Government Parties, experts from the US, and the IAEA. The meeting shared the status and needs of the region in regards to the adoption of the technology and facilitating its applications. Based on this, the meeting reviewed and established a detailed work plan for the next five years. The meeting also included a technical session on the trends in the technology use and a technical tour of the relevant facilities in the host country, Thailand.

## **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 are participating 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 throughout 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>)

#### **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**

An online training course entitled “Online Training Course on Enhancing EPR Capabilities in ASEAN Region in Radiation Monitoring and Dose Assessment” was held on 15-24 February 2023 via the RCA E-CAMPUS. A total of 48 trainees from 6 countries completed the course.

“Regional Training Course on Enhancing Technical Capabilities on Radioactivity Measurements for Environmental Radiation Monitoring during Radiation Emergencies” was held on 21-24 August 2023, in Daejeon, Korea, in cooperation with KRISS. This course provided the participants with theoretical and advanced knowledge on radiation monitoring, as well as practical training to improve on-site capabilities in the event of radiological emergencies. 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 organized a Mid-term Review Meeting in conjunction with a Technical Workshop in Seoul and Daejeon, Korea, on 6-8 November 2023, inviting NPCs from participating countries and relevant experts. The meeting reviewed project achievements, set up a work plan for 2024, and discussed the national status and future needs/priorities. A technical workshop was held in conjunction with the meeting to share technical expertise and issues/trends in radiation monitoring and dose assessment. During the meeting, an on-site tour and technical seminars were provided at various radiation monitoring facilities in Korea.

### **2.3 Implementation of a Joint Workshop with the ARCCNM**

Since 2008, the RCARO has supported a joint workshop with the Asia Regional Cooperative Council for Nuclear Medicine (ARCCNM) to train nuclear medicine physicians and scientists in Asian countries and to further promote regional cooperation for the advancement of nuclear medicine in the region. In 2023, the RCARO supported the trainees participating in the training on 3-4 November, in Korea and provided an opportunity for young professionals to present selected papers and receive training on 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 to 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 on 21 June, 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 to establish adequate emergency preparedness and response procedures for category II and III facilities, using a graded approach. Funded by the Korean Government, the project is scheduled to run for five years from 2020 to 2024, with a one-year extension decided at the Project Coordination Meeting in 2020 due to the difficulties in undertaking the planned activities as a result of the COVID-19 pandemic. Fifteen (15) GPs, with ROK as the lead country, participate in the project: AUL, BGD, KAM, 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 on 13-17 February 2023 to 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. The meeting noted that the project was on track despite the pandemic situation of Covid-19 and its impact on the work plan.

#### **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. Altogether through 01 and 02, thirteen (13) GPs have participated in the project: AUL, BGD, CPR, INS, MAL, MON, MYA, NEP, NZE, ROK, SRL, THA, VIE

According to the work plan, the Research Coordination Meeting was held on 17-19 May in Bali, Indonesia, inviting 18 participants including the Chief Scientific Investigators (CSIs) from the participating countries, Technical Officer and experts, to review and assess the project progress and to discuss the work plan for 2023-2024. 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, Technical Workshop on Nuclear Analytical Techniques for Environmental Pollution Monitoring and Impact Assessment was held to share knowledge and experience on the latest R&D trends, success stories and emerging challenges.

According to the Work Plan, all CSIs submitted final reports on the research activities carried out in 2021-2023 for review by the RRC. The RCARO will prepare an achievement report by integrating the results/outputs of the project at national and regional level. In cooperation with the Technical Officer and the CSIs, the RCARO will publish the final version in the first half of 2024 to promote and highlight the achievements and progress made in the region through the project.

### **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 started in 2022 and will run for three years until 2024.

Six (6) GPs participated in the project: AUL and PHI as Agreement Holders and INS, MAL, MON, and THA as Contract Holders. ROK and VIE could not continue participating in the project in 2023 due to difficulties in collecting the necessary data and lack of human resources.

The Research Coordination Meeting was held on 22-24 May in Bali, Indonesia, where 19 participants, including the Chief Scientific Investigators (CSIs) of the participating countries, the Technical Officer 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 the establishment of new radiotherapy centres in the region, and agreed to make an achievement report summarizing the project outcomes and achievements.

In cooperation with the AUL CSI, TO and an invited expert, Technical Workshop on Cancer Problem and Radiotherapy Utilization in Asia & Estimating Core Investment required was held in conjunction 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.

According to the work plan, all CSIs submitted annual progress reports on the research activities carried out in 2023 for review by the RRC. Based on the RRC's review, the RCARO will make the necessary financial contributions to the Research Contract Holders for their continued research in 2024.

### **3.2.3. Initiation of a New R&D Programme**

As part of RCARO's efforts to increase the scale of the research component, the RCARO submitted a proposal to the Korean government in 2022 and secured additional funding to further expand R&D in the use of nuclear technology to launch two R&D projects in 2024;

- 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

#### **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.

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 has collected available information and documents related to the RCA programme and uploaded them to the RCA website.

##### **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 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> issues of the RCA Newsletter, in May, September and December respectively. The newsletters featured information on the key outcomes of the RCA policy meetings and projects, columns on insights and perspectives on the RCA or issues related to NS&T, contributed by the NRs, LCCs and relevant experts. The Newsletters were distributed to over 750 subscribers and uploaded on the RCA website.



### **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.

## **5. Assistance to the Government Parties in Human Resources Development**

### **5.1. Capacity Building through the Korean Institutes/Universities**

#### **5.1.1. Implementation of RCARO Scholarship Programme**

With the aim of nurturing regional professionals in the field of nuclear science and technology by providing opportunities to young generations of the RCA to study in renowned universities in Korea, the RCARO has implemented the RCARO Scholarship Programme. In 2023, one student (SRL) from KAIST and five students (MON, THA, INS (2), PHI) from KINGS were 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 launched a new Master's and Ph.D programme 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. In 2023, the programme accepted ten students to start their studies from 2024 spring semester.

#### **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.

The RCARO hosted the Workshop on Enhancing Capability for Developing, Using and Maintaining Radiation Equipment 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 operates an e-learning platform on the RCA website and has developed a number of e-learning modules to provide extended learning opportunities for RCA stakeholders.

In 2023, open courses on nuclear medicine and radiation safety were available on the RCA E-CAMPUS. One closed online training course was provided in the field of EPR capabilities.

## **5.3. RCARO Fellowship Programme**

The RCARO Fellowship Programme for 2020 and 2021 was postponed due to outbreak of the COVID-19 pandemic. As the situation has been resolved, three 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.

**Annex. Table of Activities, Timelines and Indicators for RCARO Projects/Activities**

#	Objectives	Activities	Timeline				Indicators	Status
			Q1	Q2	Q3	Q4		
1	Taking on the Role of a Think-Tank for the RCA	1.1 Establishment of a Policy and Information Centre					<ul style="list-style-type: none"> <li>Establishment of a Policy and Information Centre</li> </ul>	Completed
		1.2 Support to the RCA Chair and Policy Meetings					<ul style="list-style-type: none"> <li>Supporting the RCA Chair</li> <li>Supporting preparations and operations of the RCA Policy Meetings</li> </ul>	Completed (RCARO supported the 45 <sup>th</sup> RCA NRM, 52 <sup>nd</sup> RCA GCM and participated in RCA Chairs' Meetings (regular/ad-hoc).)
		1.3 Development of a Handbook on RCA and RCA GOR					<ul style="list-style-type: none"> <li>Developing a handy guidebook on the RCA and the RCA GOR</li> </ul>	Completed
2	Enhancing and Exploring Partnerships with Regional/ International Organizations	2.1 Developing a Partnership Project/Activity with Relevant Organizations					2.1.1. Development of a Follow-up Project/Activity on EBeam Technology	Completed (A new partnership project with the US DOE approved)
							2.1.2. Launching of the Project	Completed (First project coordination meeting held)

		2.2 Implementation of the RCARO- ASEANTOM project					2.2.1. Development of Educational Materials	Completed (three visual manuals and two handbooks on radiation monitoring developed)
							2.2.2. Implementation of Regional Training Courses	Completed in Feb. and Aug.
							2.2.3. Holding a project review meeting	Completed in Nov.
		2.3. Implementation of a Joint Workshop with the ARCCNM					2.3.1. Supporting experts for participation in the workshop	Completed in Nov.
		2.4. Participation in the FNCA Coordinators Meeting					2.4.1. Participation in the FNCA coordinators meeting	Completed (RCARO participated in the meeting on 26 June, Japan.)
3	Expanding Support for the Benefit of the Government Parties	3.1 Implementation of RAS9092					3.1.1. Implementation of a Project Mid-term Review Meeting	Completed in Feb.
		3.2 Implementation of Research Projects					3.2.1. Implementation of RCARP02 <ul style="list-style-type: none"> <li>Holding a Research Coordination Meeting</li> <li>Submission of Final</li> </ul>	Completed (Research Coordination Meeting was held in May and all final reports were submitted on time.)

							Reports	
							3.2.2. Implementation of RCARP03 <ul style="list-style-type: none"> <li>Holding a Research Coordination Meeting</li> <li>Submission of Annual Progress Reports</li> </ul>	Completed (Research Coordination Meeting was held in May and all progress reports were submitted on time.)
							3.2.3. Initiation of a New R&D Programme	Completed (Two new R&D projects started in 2023.)
4	Provision of Information Service and RCA Promotion	4.1. Providing RCA information through the Integrated Information System					<ul style="list-style-type: none"> <li>Operation of the RCA Website</li> </ul>	Completed (Updated project information)
		4.2. Publication of the RCA Newsletters					<ul style="list-style-type: none"> <li>Publication of the RCA Newsletters</li> </ul>	Completed (Three issues published)
		4.3. Participation in Regional/International Events					<ul style="list-style-type: none"> <li>Participation in the regional/international events</li> </ul>	Completed (RCARO participated in VINAST15 in Aug. and other various domestic events.)
5	Assistance to the	5.1. Capacity Building					5.1.1. Implementation of	Completed (Supported one

	Government Parties in Human Resources Development	Activities with Korean Institutes/Universities					RCARO Scholarship Programme	student for the KAIST and five for the KINGS programme)
							5.1.2. Implementing Capacity Building Activities on Radiation Technology	Completed in Mar.
		5.2 Provision of Online Training through the RCA E- CAMPUS					• Operation of the RCA E- CAMPUS	Completed
		5.3. RCARO Fellowship Programme					• Fellows invited to RCARO for fellowship	Completed

## **RCARO 2024 Work Plan**

### **1. RCA Think-tank: Providing Support to the Development of the RCA**

On the occasions of the 50th Anniversary of the RCA and its 20th Anniversary in 2022, RCARO announced its commitment to enhance its support capabilities and serve as a think-tank for the RCA with a view to contributing to the promotion of regional collaboration within the NS&T domain.

RCARO will continue to actively participate in RCA policy related discussions to support the RCA Chairs' Committee, RCA WGs and the IAEA in providing views as well as relevant materials, facilitating their work.

#### **1.1 Provision of Support to the RCA Chair and Policy Meetings**

In line with the rules and responsibilities of the RCARO, the RCARO provides assistance to the IAEA in performing secretariat support and to the RCA Chair for coordination of various RCA activities. In 2024, RCARO will assist the RCA Chair and the IAEA in the preparation of NR meetings, specifically on the preparations of the meeting agenda, background documents and meeting reports. RCARO will also provide support to the Working Groups and Committees in their work for the RCA policy matters. In cooperation with the IAEA and GPs, the RCARO will prepare the 2023 RCA Annual Report providing information on the implementation of the RCA Programme, key policy decisions of the NR meetings and achievements of the non-technical activities, and submit it to the 46th RCA NRM for approval.

#### **1.2 Updates on the RCA Annual Report**

RCARO prepared draft of 2023 RCA Annual Report with enhancements suggested by the 52nd GCM (2023). Revisions include;

- Addition of an executive summary, introductory page, disclaimer etc.
- Addition of messages from Key RCA Stakeholders: IAEA/RCA/RCA PAC/RCARO
- Addition of project progress towards achievements based on the LFM
- Inclusion of infographics depicting achievement data since 1972
- Development of an overall design

After review at the 46th NRM this year and receiving comments from the GPs, RCARO will make the necessary refinements accordingly. The finalised report will be circulated to the GPs and uploaded on the RCA website.

#### **1.3 Publication of RCA Newsletters with Special Editions**

RCARO will publish the 7th and 8th issue in May and September 2024 respectively, to provide timely information on the RCA and NS&T and facilitate the information sharing amongst the GPs

and relevant stakeholders. Additionally, RCARO plans to issue two special editions focused on specific topics/issues related NS&T in the Asia-Pacific region. While the Newsletter provides overall information and insights on the RCA and NS&T, the special edition will focus on providing in-depth knowledge/information on the specific topics related to the trend/issues on the NS&T.

#### **1.4 Introductory Workshop for the RCA NRs**

In response to the recommendation of the 45th RCA NRM (2023), RCARO will hold an Introductory Workshop on the RCA Programme and Its Policy on 22-25 July 2024 in Seoul, Korea, inviting those new RCA NRs appointed within last 3 years.

#### **1.5 RCA Policy Seminar**

RCARO, in cooperation with the IAEA, plans to host an RCA Policy Seminar as a side-event during the week of the IAEA General Conference to deliver various topics on the RCA policy matters and provide a forum for discussions with the RCA stakeholders. Possible agenda items include: ways to enhance gender equality in the RCA programme; expanding the RCA's outreach to the SIDS in the Pacific region; conducting socio-economic assessment of the RCA projects; ways to enhance connections of the RCA programme with the IAEA initiatives; and any other issues that require attention.

### **2. Complementary Projects: Addressing Regional Needs for Technology Development**

#### **2.1 [RP] Implementation of RCA Research Projects**

##### **2.1.1 [RP02] Implementation of the RP on Air Quality and Environmental Impact Assessment of Industrial Activities in the Region**

With the aim of improving the quality of the environment by providing appropriate pollutant data to the researchers and relevant stakeholders, the project has been implemented during Phase 1 (2018-2020) and Phase 2 (2020-2023). Throughout two phases, a total of thirteen (13) GPs have participated in the project (AUL, BGD, CPR, INS, MAL, MON, MYA NEP, NZE, ROK, SRL, THA, VIE).

According to the work plan, RCARO received the final reports from all 11 participating countries in November 2023. The reports were reviewed by the Technical Officer (TO) and Research Review Committee (RRC) for final refinement and conclusion of the project in 2023. In cooperation with the TO and INS Chief Scientific Investigator (CSI), RCARO has drafted an achievement report based on the final reports to review and assess the progress made by the project in addressing the impact of the industrial activities in the air and surrounding environment in the region, throughout the six years.



Reflecting the comments of the CSIs of the participating countries, the final version of the achievement report will be distributed to the GPs and also be uploaded on the RCA website. For more effective promotion of the project achievements and highlight the contribution to addressing the air quality in the region, RCARO will also make a short version of the report in a leaflet form in Q2 of 2024. The leaflet will be published and distributed to the RCA GPs via the RCA website. Based on the achievement report, RCARO will conduct an internal analysis of project outcomes and achievements, engaging relevant experts in Q3 of 2024.

### **2.1.2 [RP03] Implementation of the RP on Closing the Gap in Access to Radiotherapy in RCA**

To improve cancer planning and scale up radiotherapy services by providing evidence-based information on the radiotherapy services, the project was launched in 2022 and is to be implemented for three years until 2024. Six (6) GPs are participating in the project: AUL and PHI, as Agreement Holders and INS, MAL, MON and THA as Contract Holders. ROK and VIE could not continue to participate in the project due to difficulties in collecting the necessary data and limited human resources.

All 8 participating countries submitted the Annual Progress Reports to the RCARO in Oct. 2023 for review by the TO and RRC. Based on the assessment by the RRC, RCARO made financial contributions to the participating countries in Feb. 2024. According to the work plan, the Research Training Course on Outcome Assessment was held on 19-20 Feb. 2024 virtually. CSIs and their research team members as well as interested researchers were invited to the event to maximise the impact of the training course. With the participation of about 50 experts, the RTC provided essential knowledge and practical guidance related to the economic analysis of the radiotherapy access gaps in the region. The participants also reviewed the project progress and work plan for the remaining 2024, towards completion of the project in December. Following the work plan, RCARO supported consultation meetings between participating countries and TO and a relevant expert in March and April for finalisation of the research results produced in 2023-2024.

RCARO will hold the Research Coordination Meeting on 6-8 May 2024 virtually inviting TO, relevant experts and CSIs. The Meeting will review the research outcomes of the participating countries and have a technical session on outcome assessment with more practical and advanced knowledge and guidelines. According to the work plan, CSIs will be requested to submit final reports in November for review by the TO and RRC. Based on the final reports, RCARO will draft an achievement report for the promotion and dissemination of the project outcomes and achievements in 2025.

## **2.2 [EB Project] Implementation of RAS9092 “Strengthening the Capacity to Respond to Radiological Emergency of Category II and III Facilities in the RCA Region”**

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 a one-year extension 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, are participating in the project: AUL, BGD, KAM, IND, INS, MAL, MON, MYA, NEP, PAK, PHI, SIN, THA and VIE.

### **2.2.1 Regional Workshop on the Development of a National Radiation Emergency Plan (NREP)**

Regional Workshop on the Development of a National Radiation Emergency Plan (NREP) (including Hazard Assessment) was held on 25 to 29 March 2024 at the OAP, Thailand, inviting 28 participants from the IAEA and 13 participating countries. The workshop provided strategies for the development of a national radiation emergency plan and will serve as an important basis for the implementation of follow-up expert missions under the project.

### **2.2.2 Expert Missions**

A survey on the needs for expert missions is on-going and 2-3 missions will be implemented based on the results. Final Review Meeting will be held in December to review and assess the project outcomes/achievements, inviting the NPCs of participating countries, IAEA and relevant experts.

### **2.2.3 Final Review Meeting**

The Final Review Meeting will be held by the end of the year as a completion of the project. The project achievements will be reviewed and follow-up actions will be discussed among the NPCs and experts.

## **2.3 Survey on the Regional Needs for a New Project**

With the completion of the above projects, RCARO plans to launch 1-2 new projects under the framework of the RCARO Managed Projects, subject to the budget availability of the RCARO. The projects will be developed based on the needs of the GPs for various cooperative activities including cooperative research, training, expert missions and policy related studies, in forms of Research Projects, Supplementary Projects and Training Projects. To better accommodate the

needs of the GPs, RCARO will develop a dedicated webpage where GPs can submit proposals throughout the year until December 2024. RCARO will develop the projects aiming to initiate them within 2025 according to the relevant procedures of the RCA GOR (Procedures for Development of Projects by RCARO).

### **3. RCA Information Service: Effective Management of the RCA Information and Data**

RCARO has been operating the official RCA website which serves as a repository of documents related to RCA Programme and its policies as well as a communication channel for RCA stakeholders based on the RCA GOR. It was also recommended by the 41st NRM in 2019 that the website incorporate and share documents produced under RCA projects to facilitate exchange of necessary information and materials among the project stakeholders. On the occasion of its 20th Anniversary, RCARO announced its plan to enhance its information service, covering a wide range of NS&T data of the region.

#### **3.1 RCA Information**

In pursuit of strengthening the repository role of the RCA website, RCARO will develop strategies to improve the effectiveness of collecting the RCA project documents in consultation with the IAEA and LCCs. RCARO will also improve the current RCA website to be more user-friendly and enable easier access to RCA and RCARO's project/activity documents.

#### **3.2 Data-Hub**

RCARO will proceed with developing the Data-Hub, referring to successful cases of other international organizations' database, such as the ESCAP's Asia Pacific Energy Portal (<https://asiapacificenergy.org/>). Diverse kinds of NS&T information of the region, including technical reports, trend briefings, policies and country overviews, obtained from open sources, i.e., the media, promotional websites, journals, etc., will be uploaded on the platform.

The Data-Hub will firstly be demonstrated at the New NR Workshop, to be held in July in Korea, to showcase the functions and capabilities of the website and request for feedbacks to the participating NRs and stakeholders. Based on the feedbacks, RCARO will make the final improvement of the RCA website before its official launch in September.

#### **3.3 LCC Workshop for Systematic Archiving of RCA Documents**

While RCARO has been providing the RCA information service according to the RCA GOR and decisions of the NRs, the RCA website still lacks a wide range of information of the RCA Programme. This includes meeting reports, country presentations, training materials and achievement reports, valuable for RCA stakeholders to have in-depth understanding and knowledge on the RCA Programme and also review/analyse it to develop new projects. In this

regard, RCARO is considering to hold a LCC workshop in consultation with the IAEA and GPs to provide information on their roles and responsibilities related to the information management and also on how to make use of the RCA website while carrying out their roles in leading projects and archive the resources.

#### **4. Capacity Building: Nurturing Professionals for Sustainable**

##### **4.1 RCARO Scholarship Programme**

Under the scholarship programme that was launched in 2003, RCARO has supported students who wish to study for a Master's or Doctoral Degree in the field of nuclear science and technology. Currently, three educational institutes in Korea are cooperating with RCARO: KAIST (Korea Advanced Institute of Science and Technology), KINGS (KEPCO(Korea Electric Power Corporation) International Nuclear Graduate School) and UST (University of Science and Technology).

##### **● KAIST Master's Degree Programme**

KAIST is the first and top science and technology university in Korea, established in 1971 by the Korean Government to educate scientists and engineers. The Programme supports students for master's degree in Nuclear and Quantum Engineering for two years. Since 2003, a total of forty-one students from eleven countries have received degrees. In 2024, three students from Indonesia, Malaysia, Sri Lanka are supported by the Programme.

##### **● KINGS Master's Degree Programme**

KINGS is an educational institute specialized in Nuclear Power and Energy, established in 2012 to foster energy policy decision makers to respond to energy industry transformation and climate change. It's a two-year programme for master's degree in Energy Policy and Engineering, under which the first year is spent studying at the KINGS and the second year for writing a thesis in applicant's home country. Since 2022, four students from three countries have received degrees. In 2024, three students from Indonesia, Myanmar, Philippines are selected under the Programme for their study at the KINGS.

##### **● UST Doctoral Degree or Integrated/ Master's Degree Programme**

UST is a science and technology graduate school jointly established by the Government-Funded Research Institutes (GFRIs) in Korea in 2004 to nurture future leaders in the fields of science and technology. Among thirty-five GFRIs which currently provide support functioning as Campus, this Programme cooperates with two Campuses, KAERI (Korea Atomic Energy Research Institute), KIRAMS (Korea Institute of Radiological & Medical Sciences), and its majors include Nuclear Science and Technology, Radiation Science, Nuclear and Radiation Safety, Artificial Intelligence, and Radiological & Medico-Oncological Sciences.

In 2024, one student from Viet Nam was selected for the spring semester and the process for the fall semester is being carried out to recruit students from the region.

#### **4.2 Expert Support programme**

RCARO will support a Senior Researcher of Malaysian Nuclear Agency and LCC of RAS1029, for his participation in the 20th World Conference on Non-Destructive Testing to be held in May in Korea. He will present on “The Role of the RCA in the Promotion of NDT in Asia and the Pacific Region” based on his achievements made through a series of RCA projects. RCARO plans to expand the programme to support about four experts per year.

#### **4.3 Fellowship**

Upon the call for applications for the 2024 RCARO Fellowship Programme, RCARO received a total of fifteen applications from ten Government Parties, which marked a greater number of applications compared to the previous years. Responding to the great interests and needs of the Government Parties, RCARO decided to expand the Programme, selecting five applicants instead of two which RCARO originally planned for the year 2024.

The applicants from Fiji, India, Indonesia, Philippines, and Thailand were selected based on their qualifications, previous involvement with RCA/RCA-related activities and motivation of the applicants, giving consideration to national distribution.

The selectees will be invited to work at the RCARO for two months depending on their availability, with the start date decided through consultation between the fellows and the RCARO. RCARO will make further necessary arrangements for their travel to and fellowship in the RCARO. RCARO fellows will spend time learning the RCA framework and projects and will be tasked with understanding nuclear technology trends and researching relevant information for the RCA GPs.

#### **4.4 Expanding the Capacity Building Programme**

RCARO, in cooperation with nuclear related institutes and universities in Korea, will expand the current capacity building programme to provide a full and complete learning to the students from the RCA GPs. RCARO plans to develop on-the-job training activities and a post-doctoral programme and also to expand the Expert Support Programme to supporting around four experts a year.

### **5. Partnerships: Engaging with Partners for Expansion of the RCA**

#### **5.1 [US DOE] Implementation of the “Project on Supporting the Adoption of eBeam Technology and its Applications in Areas of Food and Agriculture, Industry, Human Health and Environment Treatment”**

In the partnership with the Office of Radiological Security (ORS), National Nuclear Security Administration of the US Department of Energy, the RCARO will implement the “Project on

Supporting the Adoption of eBeam Technology and its Applications in Areas of Food and Agriculture, Industry, Human Health and Environment Treatment” from 2024 to 2028. The First Project Coordination Meeting was held in December 2023, to which a total of twenty-one (21) RCA GPs were invited.

\* AUL, BGD, CPR, KAM, FIJ, IND, INS, JPN, ROK, LAO, MAL, MON, MYA, NZE, NEP, PAK, PHI, SIN, SRL, THA and VIE.

#### **5.1.1 Expert Missions**

According to the work plan confirmed at the Project Coordination Meeting, three expert missions will be carried out in 2024 in Cambodia, Mongolia, and Malaysia. Prior to the missions, the host countries will submit a request of mission in detail to find the most appropriate experts to fulfill the needs and respond to the pressing issues of each country.

#### **5.1.2 Hands-on Electron Beam Technical Workshop**

Hands-On Electron Beam Technology Workshop was held on 15-19 April 2024 in National Center for Electron Beam Research (NCEBR), Texas A&M University, the US, inviting 13 participants from the RCA countries. In line with the overarching goal of the project to support the eBeam infrastructure building and facilitation of its applications, this workshop provided a comprehensive understanding of the principles and applications of eBeam and X-ray technologies to those countries who are planning to adopt the technology. During the workshop, participants had a chance to participate in the hands-on sessions where they can learn dose-mapping and get preliminary data on the products they bring from their home countries.

#### **5.1.3 Regional Workshop on eBeam Applications**

In December this year, a regional workshop that provide hands-on experiments on dose mapping is planned to be held in Research and Development Center for Radiation Technology (VINAGAMMA), Viet Nam.

### **5.2 [ASEANTOM] Implementation of the “Project on Enhancing Emergency Preparedness and Response Capabilities in the ASEAN Region through Building Technical Capacity in Radiation Monitoring and Dose Assessment (Phase 2)”**

#### **5.2.1 Online Workshop for Beginner Countries**

According to the work plan confirmed at the last project coordination in Nov, 2023, Introductory Workshop on In-Situ Radiation Detection Demonstration and Basic Gamma Spectrometry Technique for Enhancing Emergency Preparedness and Response Capabilities, was held virtually from 20 to 21 February 2024, inviting around 50 participants from the region. The workshop provided basic lectures including introduction to equipment/detectors (including backpack), selection of sites for monitoring/sampling, basic gamma spectrometry etc.

### **5.2.2 Regional Training Course**

In line with the work plan, Regional Training Course on Practical Application of Radiation Measurement, Radioanalytical Method for Environment Monitoring will be held at the OAP, Thailand, from 10 to 14 June. The course aims to build advanced theoretical and practical capacity on accurate radioactivity measurements for environment monitoring and to provide training on typical methods & software used for radioactivity analysis of environmental samples. Exercises based on an accident scenario will be included to provide participants with practical knowledge and skills for rapid and accurate radiation monitoring and dose assessment in the event of a radiological accidents.

### **5.2.3 Final Review Meeting**

The Final Review Meeting will be held at the end of the year as a completion of the project. The project achievements will be reviewed and follow-up actions will be discussed among the NPCs and experts.

RCARO is currently under process of developing a follow-up project in cooperation with the OAP, Thailand, and other relevant institutes of Korea, to up-scale the current project.

## **5.3 [ARCCNM] Implementation of a Joint Workshop**

Since 2008, RCARO has been supporting the joint workshop with the Asia Regional Cooperative Council for Nuclear Medicine (ARCCNM) to train nuclear medicine physicians and scientists in developing and less developed Asian countries and to further promote regional cooperation to promote nuclear medicine in these countries.

In 2024, a webinar and a workshop will be held in July and November in cooperation with the Korean Society of Nuclear Medicine and the Asian Nuclear Medicine Board. Experts will be invited to share views and opinions on specific matters of Nuclear Medicine in Asia.

## **6. Other Projects and Activities**

### **6.1 [FNCA] Participation in FNCA Events**

RCARO has been invited to the FNCA Coordinators Meetings on behalf of the RCA to present on the achievements of the RCA and promote cooperation between the RCA and FNCA.

RCARO participated in the 24th FNCA Coordinators Meeting on 12-13 March 2024 in Tokyo, Japan, to present on the overview of the RCA and its Programme and discuss possible collaboration between the RCA and the FNCA. The Meeting agreed that the two bodies should encourage cooperation which can lead to making synergies and wider exchange of information/experiences among the regional experts.

## **6.2 Holding a Special Exhibition at the IAEA Ministerial Level Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme, Vienna, 26-28 November 2024**

At the request of the IAEA, RCARO is considering participation in the IAEA Ministerial Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme to be held on 26-28 November 2024 Vienna, Austria. According to the discussions and decisions at the 46th NRM, RCARO will prepare an RCA exhibition booth to promote the RCA to the various audiences including representatives from the government, international/regional organisations.

## **6.3 Korean R&D Programme**

In an effort to expand the support for the cooperative research of the region, RCARO has been supporting two projects under the Korean R&D Programme. RCARO will continue supporting the Programme with launching two new research projects in 2024 between the Korean nuclear institutes and RCA GPs based on the regional issues/needs identified.

- Collaborative Research and Technical Support for Water Purification Using E-beam Technology
- Developing an AI-based Automatic Detection Programme and Critical Technology Elements for Portable X-ray Diagnostic Devices
- Two new projects to be launched



**Annex. Table of Activities, Timelines and Indicators for RCARO Projects/Activities**

#	Objectives	Activities	Timeline				Indicators
			Q1	Q2	Q3	Q4	
1	RCA Think-tank: Providing Support to the Development of the RCA	1.1 Provision of Support to the RCA Chair and Policy Meetings					<ul style="list-style-type: none"> <li>Providing assistance to the RCA Chair for coordination of RCA activities</li> </ul>
		1.2 Updates on the RCA Annual Report					<ul style="list-style-type: none"> <li>RCA Annual Report drafted and finalized with amendments</li> </ul>
		1.3 Publication of RCA Newsletters with Special Editions					<ul style="list-style-type: none"> <li>Four issues published including two special editions</li> </ul>
		1.4 Introductory Workshop for the RCA NRs					<ul style="list-style-type: none"> <li>Hosting the workshop</li> </ul>
		1.5 RCA Policy Seminar					<ul style="list-style-type: none"> <li>Hosting the side-event at the IAEA GC</li> </ul>
	Complementary Projects: Addressing Regional Needs for Technology Development	2.2 [RP] Implementation of Research Projects					3.2.1. Implementation of RCARP02 <ul style="list-style-type: none"> <li>Publishing the Project Achievement Report</li> </ul>
							3.2.2. Implementation of RCARP03 <ul style="list-style-type: none"> <li>Hosting Research Training Course</li> <li>Hosting of Research Coordination Meeting</li> </ul>
		2.2 [EB Project] Implementation of RAS9092					<ul style="list-style-type: none"> <li>Hosting of Regional Workshop on the Development of a National Radiation</li> </ul>

							Emergency Plan (NREP) <ul style="list-style-type: none"> <li>• Hosting of Expert Missions</li> <li>• Hosting of Final Review Meeting</li> </ul>
		2.3 Survey on the Regional Needs for a New Project					<ul style="list-style-type: none"> <li>• Survey conducted</li> </ul>
3	RCA Information Service: Effective Management of the RCA Information and Data	3.1 RCA Information					<ul style="list-style-type: none"> <li>• Operation of the RCA website</li> </ul>
		3.2 Data-Hub					<ul style="list-style-type: none"> <li>• Opening of the data-hub</li> <li>• Operation of the data-hub</li> </ul>
		3.3 LCC Workshop for Systematic Archiving of RCA Documents					<ul style="list-style-type: none"> <li>• (to be hosted in 2025)</li> </ul>
4	Supporting HRD Activities	4.1 RCARO Scholarship Programme					<ul style="list-style-type: none"> <li>• Granting scholarships to RCA students</li> </ul>
		4.2 Expert Support programme					<ul style="list-style-type: none"> <li>• Experts selected for support in 2025</li> </ul>
		4.3 Fellowship					<ul style="list-style-type: none"> <li>• Inviting selected fellows</li> </ul>
		4.4 Expanding the Capacity Building Programme					<ul style="list-style-type: none"> <li>• Surveys conducted for launching new programmes</li> </ul>
5	Partnerships: Engaging with	5.1 [US DOE] Implementation of the “Project on Supporting the					<ul style="list-style-type: none"> <li>• Hosting of Expert Missions</li> <li>• Hosting of Hands-on Electron Beam Technical</li> </ul>

	Partners for Expansion of the RCA	Adoption of eBeam Technology and its Applications”					Workshop
		5.2 [ASEANTOM] Implementation of the “Project on Enhancing Emergency Preparedness and Response Capabilities in the ASEAN Region”					<ul style="list-style-type: none"> <li>• Hosting of Regional Workshop on eBeam Applications</li> </ul>
		5.3 [ARCCNM] Implementation of a Joint Workshop					<ul style="list-style-type: none"> <li>• Hosting of Online Workshop for Beginner Countries</li> <li>• Hosting of Regional Training Course</li> <li>• Hosting of Final Review Meeting</li> </ul>
6	Other Projects and Activities to support the RCA	6.1 [FNCA] Participation in FNCA Events					<ul style="list-style-type: none"> <li>• Hosting of Workshop</li> </ul>
		6.2 Holding a Special Exhibition at the IAEA Ministerial Level Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme, Vienna, 26-28 November 2024					<ul style="list-style-type: none"> <li>• Participation in the FNCA meeting</li> </ul>
		6.3 Korean R&D Programme					<ul style="list-style-type: none"> <li>• Hosting of Exhibition</li> </ul>
							<ul style="list-style-type: none"> <li>• Supporting R&amp;D projects funded by the Korean Government</li> </ul>