













## RCARO 2021 Work Performance

	Objectives	Activities	Timeline				Indicators	Status
			QT 1	QT 2	QT 3	QT 4		
1	Increasing the awareness of the RCA	1.1. Provision of RCA information through the RCA website					1.1.1. Establishment of an integrated information system 1.1.2. Update data on the RCA and its projects	In progress -To be completed in 2022 Done -Updated project information
		1.2. Publication of Newsletters					1.2.1. Publication of Newsletters	In progress -The first edition to be published in March 2022
		1.3. Participation in int'l events for the RCA promotion					1.3.1. Exhibition on RCA activities to target audiences 1.3.2. Supporting RCA experts for promotion of the RCA and its projects	Done -Participated in the online exhibition  Postponed to 2022
2	Enhancing and exploring	2.1. Implementation of the RCA/UNOSSC					2.1.1. Development of e-Learning modules	Done -Developed 17 e-modules

	partnerships with regional/ international organizations	project on electron beam(EB) applications				2.1.2. Holding a final review meeting	Done -Held on 8-9 June 2021
						2.1.3. Publication of a final report and submission of progress/financial reports	Done -Published a final report, consolidating the outputs and outcomes of the project
		2.2. Implementation of the RCARO- ASEANTOM project				2.2.1. Holding coordination/review meeting(s)	Done -Held on 2, 4 March 2021
						2.2.2. Conducting an online course	Done -Held on 22-26 Nov. 2021
						2.2.3. Development of a guideline	Done -Developed a guideline, supported by the area experts
		2.3. RCA/ARCCNM workshop				2.3.1. Supporting experts for participation in a RCA/ARCCNM workshop	Done -Supported the workshop on 1- 3 Nov.2021
		2.4. Participation in the FNCA coordinators				2.4.1. Participation in the 21 <sup>st</sup> FNCA coordinators	Not participated due to a limited scope of the meeting

		meeting					meeting	
3	Expanding support for the benefit of the GPs	<p>3.1. Implementation of RAS9092</p> <p>3.2. Implementation of the RCARO Managed Project: Research Project</p>					<p>3.1.1. Conducting a webinar</p> <p>3.1.2. Submission of progress report</p> <p>3.2.1. Conducting a research coordination meeting</p> <p>3.2.2 Development of a new research project</p>	<p>Done</p> <p>-Held on 7 Sept. 2021</p> <p>Done</p> <p>-To be submitted by 15 Jan. 2022</p> <p>Done</p> <p>-Held on 18-19 March 2021</p> <p>Done</p> <p>-Developed a new RP on radiotherapy</p>
4	Assisting the GPs in human resource development	<p>4.1. Provision of online education/ training through the RCA e-Learning Campus</p> <p>4.2. Capacity building through Korean Institutes/Universities</p>					<p>4.1.1. Enhancement of the RCA e-Learning Campus</p> <p>4.2.1.Supporting the RCARO/KAIST Master's Degree Programme</p> <p>4.2.2. Implementing capacity building activities on</p>	<p>In progress</p> <p>-To be completed in 2022</p> <p>Done</p> <p>-Supported 4 students (MAL, SRL, INS, PHI)</p> <p>Done</p> <p>-Held on 1-12 Nov.2021</p>

		4.3. IAEA/RCARO training course				radiation technology 4.3.1. Conducting an online course	Done -Conducted an online course in connection with ASEANTOM project
		4.4. RCARO Fellowship Programme				4.4.1. Inviting fellows from GPs to the RCARO	Postponed due to the COVID-19 pandemic
5	Facilitating the better implementation of the RCA Programme	5.1. Supporting the IAEA for RCA administrative matters				5.1.1. Providing support for RCA policy meetings and the RCA Chair in performing his/her duties	Done -Assisted the IAEA in preparing for the 43 <sup>rd</sup> NRM and the 50 <sup>th</sup> GCM
		5.2. Assisting the RCA Chair for coordination of activities				5.2.1. Providing support to the RCA Chair in performing his/her duties	Done -Assisted the RCA Chair in performing relevant duties
		5.3. Participation in the activities of the Special Task Force (STF)				5.3.1. Participation in the STF meeting	Done -Participated in meetings in February, August and November

		5.4. Provision of Extra-Budgetary(EB) contribution to the IAEA				■	5.4.1. Providing extra budget for RCA projects in financial needs	To be continued
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# **RCARO 2021 Work Performance**

## **1. Increasing the awareness of the RCA**

### **1.1 Provision of RCA information through the RCA Website**

#### **1.1.1. Establishment of an integrated information system**

In response to the growing needs and demands for enhancement of the website role, especially in the global trend of digitalization, RCARO initiated a plan to reform the RCA website to establish an integrated information system in consultation with an IT company.

While continuing its role of providing and archiving overall information on the RCA, policy meetings and RCA projects as well as information on regional resources, new platforms are being developed that will provide expanded information and more comprehensive on-line services to the RCA Government Parties.

A separate platform of data hub is being developed to serve as the repository of information on the RCA including human/institutional resources, technological status of the region in the nuclear science and technology by archiving the details and outputs of RCA projects.

The RCA e-Learning Campus is being upgraded to provide not only e-learning but also to assist RCA GPs in conducting other online activities such as virtual meetings and training activities. Further, a dedicated platform called 'RCARO project e-management' is also being established to manage the activities of RCARO, where RCA GPs can easily access to information and participate in various activities managed and initiated by RCARO. The integrated system with new platforms is to be completed by the first half of 2022.

#### **1.1.2. Update data on the RCA and its projects on the RCA Website**

In accordance with the recommendation of the 41<sup>st</sup> NRM to upload the RCA project documents on the RCA website, RCARO has been operating a dedicated platform for providing information and documents of the RCA projects on the RCA website. RCARO requested the LCCs of on-going and recently completed projects for materials generated under the projects in the previous year for uploading on the platform. In addition, RCARO uploaded the information of the projects commencing in 2022, including the details of the LCCs and (A)NPCs, and the project documents received from the RCA FP.

To support the preparation of the RCA Programme Cycle 2024-2025, the RCA website served as a platform for submitting the pre-concept proposals and providing resource documents, including the RCA Regional Programme Framework 2024-2029.

### **1.2. Publication of Newsletters**

With a view to moving with the global trend of digitalisation and enhancing the promotional effect,

RCARO submitted its plan to publish RCA Newsletters, which was then approved by the 43<sup>rd</sup> NRM. Detailed plan for publication of the RCA Newsletter, containing its structure and publication procedure was prepared. In addition, the RCA Newsletter Committee was established, comprising of Publication Advisors (RCARO SAC members), Editorial Advisors (2-3 RCA experts) and RCARO, to manage the whole process of publication of the Newsletter and to ensure its reliability and quality.

In preparation of the first edition of the Newsletter, a meeting of the Editorial Advisors and RCARO was held virtually on 19 October 2021, where the article topics and authors for the first edition were discussed. Potential readers, such as RCA stakeholders, policy makers and local organizations of the region, were also identified. Based on the discussion with the Editorial Advisors, RCARO requested identified experts for featured articles on diverse aspects of the RCA to publish the first edition in March 2022.

### **1.3. Participation in regional/international events for promotion of the RCA and its activities**

#### **1.3.1. Exhibition on RCA activities to target audiences**

It was approved at the 48<sup>th</sup> GCM that RCARO participate in the 15<sup>th</sup> International Congress of the International Radiation Protection Association (IRPA15), initially planned to be held in 2020 in Korea. However, due to the outbreak of COVID-19 pandemic, the event was decided to be held virtually on 18 January - 5 February 2021. Therefore, RCARO ran an e-booth at the online exhibition where the RCA videos and electronic versions of promotional materials such as brochures and success stories were displayed.

#### **1.3.2. Supporting the RCA expert for promotion of the RCA and its projects**

Due to the prolonged COVID-19 pandemic, the 20<sup>th</sup> World Conference on Non-Destructive Testing (WCNDT2020), where a selectee from MAL was planned to be supported for her participation, was once again postponed to 2022. RCARO will keep monitor the situation and make necessary arrangements for his participation in the event in due course.

## **2. Enhancing and exploring partnerships with regional/international organizations**

### **2.1 Implementation of the RCA/UNOSSC project on Electron Beam applications**

RCA/UNOSSC project on Electron Beam applications for value addition to food and industrial products and degradation of environmental pollutants in the Asia Pacific region was implemented

from 2013 to 2021 (phase 1: 2013-2015, phase 2: 2017-2021), with the aim of promoting and disseminating the use of EBeam technology in the areas of agriculture, industry and environmental treatment.

Fifteen (15) GPs, ROK as the lead country, participated in the project: BGD, KAM, IND, INS, MAL, MON, MYA, NEP, NZE, PAK, PHI, SRL, THA, and VIE.

### **2.1.1 Development of e-Learning modules**

Towards contributing to the continued education of the participating countries after completion of the project, 17 e-Learning modules on the EB applications were developed in cooperation with Korea Atomic Energy Research Institute (KAERI). The modules include lectures on the essential knowledge ranging from the EB accelerator to its applications according to the thematic area. An online training course was held for two weeks from 30 August to 10 September 2021, attended by 23 participants from 8 countries. The course was composed of e-Learning modules developed by the experts from KAERI, real-time lectures, tests and assignments.

### **2.1.2 Holding a final review meeting**

Final review meeting was held virtually on 8-9 June 2021 in conjunction with a technical workshop on Ebeam principles and applications: introducing A to Z, attended by 54 participants from 13 countries.

To celebrate the successful completion of the project, an online exhibition was held, showcasing the project achievements.

During the meeting, it was noted that the project has been successfully completed according to the set objectives and work plan and recommended that RCARO consider planning a follow-up project/activity in the field, noting the strong needs for further development of the technology and its applications, especially in terms of human resource and facility development.

### **2.1.3 Publication of a final report and submission of progress/financial reports**

Consolidating the outputs and outcomes of the project at national and regional level, a final report was published and shared with the participating countries and the UNOSSC.

Upon the rules and regulations of the UNOSSC, progress and financial reports were submitted in due course.

## **2.2 Implementation of the RCARO/ASEANTOM project**

RCARO has been implementing a partnership project with the ASEANTOM (ASEAN Network of Regulatory Bodies on Atomic Energy) on “enhancing emergency preparedness and response capabilities through building technical capacity in radiation monitoring and dose assessment following the nuclear and radiological emergencies” since 2020. It’s a two-year project and 10 ASEAN countries participate in this project.

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

### **2.2.1 Holding coordination/review meeting(s)**

Project coordination meeting was held virtually on 2 March 2021 for preparatory discussion and on 4 March for the formal meeting, inviting the NPCs and relevant experts. The meeting identified the national/regional status of the subject area and confirmed the details of 2021 work plan. It was decided that the development of guidelines, a webinar, an e-Learning course and a review meeting with technical workshop be conducted in 2021.

### **2.2.2 Development of a guideline**

According to the work plan, “Guideline for radioactivity measurements in the environment and individual dose assessment following a nuclear or radiological emergency” has been developed, supported by the experts from Australia, Japan and Korea.

To make it fit and useful for the ASEAN, a survey was conducted to identify the status of the countries, such as equipment, system and personnel. An expert meeting was followed on 17 March and decided the scope and contents of the guideline, consolidating the survey result. After review by area experts and reflecting comments from the ASEAN, the guideline has been finalized. A webinar on introduction to the guideline was held on 31 August 2021, attended by 58 participants including the NPCs, relevant experts of the project and developers of the guideline.

### **2.2.3 Conducting an online course**

An Online Training Course on Enhancing Emergency Preparedness and Response Capabilities in ASEAN Region in Radiation and Dose Assessment was held on 22-26 November 2021, attended by 17 participants from 9 countries.

The training course covered theoretical and practical aspects of major areas in radiation monitoring and dose assessment by means of real-time lectures and e-Learning modules newly developed in 2021 with the support of the experts from Korea and Japan. The participants were also requested to take the introductory course utilizing the modules previously developed in 2020,

in order to be better prepared for the event and get familiar with the technology.

### **2.3 Supporting the RCA/ARCCNM workshop**

RCARO has been supporting the RCA/ARCCNM workshop to educate nuclear medicine physicians and scientists in developing and less developed Asian countries and further to foster regional cooperation to promote nuclear medicine in those countries.

RCARO continued its support for the workshop held virtually on 1-3 November 2021.

### **2.4 Participation in the FNCA Coordinators meeting**

On behalf of the RCA, RCARO has been participating in the FNCA Coordinators Meeting held in Japan to present the achievements of the RCA and promote cooperation between the RCA and the FNCA. However, due to the COVID-19 pandemic, the meeting was held virtually, limiting to the FNCA activities. RCARO will continue seeking for ways to promote cooperation between the RCA and FNCA.

## **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” has been 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, extending one more year, as decided at the project coordination meeting in 2020 due to the difficulties in undertaking the planned activities resulted from the COVID-19 pandemic.

Fifteen (15) GPs, 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 Conducting a webinar**

According to the work plan decided at the project coordination meeting in 2020, a webinar was conducted on 7 September 2021, attended by 36 participants in order to enhance the understanding on the IAEA safety standards and to provide information on how national standards are developed,

established and utilized in the field.

### **3.1.2 Submission of progress report**

Integrating national reports received from the NPCs of the project, Project Progress Assessment Report (PPAR) will be submitted to the IAEA in due time.

## **3.2 Implementation of the RCARO Managed Project: Research Project**

RCARO has been implementing the RCA Research Project on “Air Quality and Environmental Impact Assessment of Industrial Activities in the Region” as a component of the RCARO Managed Projects under the RCA Programme.

Decided by the 46<sup>th</sup> GCM on the research theme for improving the quality of environment through provision of appropriate pollutant data to researchers and relevant stakeholders, the 1<sup>st</sup> phase of the project (RCARP01) was implemented for three years from 2018.

Followed by the approval of the 48<sup>th</sup> GCM, the 2<sup>nd</sup> phase of the project (RCARP02) on the expanded research on other pollutant sources such as crops, water and soil is to be implemented for another three years from 2021 to 2023.

Twelve (12) GPs participate in the 2<sup>nd</sup> phase of the project: AUL, NZE, ROK as Agreement Holders and CPR, INS, MAL, MON, MYA, NEP, PAK, THA and VIE as Contract Holders.

\*MYA withdrew its participation in the project in October 2021 due to political situation in the country.

### **3.2.1 Conducting a research coordination meeting**

Research coordination meeting was held on 18-19 March 2021 virtually, inviting the CSIs from 12 participating countries, Chair of the Research Review Committee and Technical Officer of the project. The Meeting reviewed project achievements of the phase 1 and discussed and finalised the major project components of the 2<sup>nd</sup> phase such as objectives, expected outputs/outcomes, performance indicators and work plan for 2021-2023.

According to the work plan, all CSIs submitted annual progress reports on the research activities carried out in 2021 for review by the RRC. Based on the review by the RRC, RCARO made necessary financial contributions to the Research Contract Holders for their continued research.

### **3.2.2. Development of a new Research Project**

To accommodate the needs of the GPs on the research to address regional problems through nuclear science and technology and supplement the RCA Programme, RCARO submitted its plan to initiate a new RCA Research Project to the 43<sup>rd</sup> NRM. Upon approval of the 43<sup>rd</sup> NRM,

RCARO conducted a survey of the NRs to identify the regional needs on the research for the new RCARP.

Fifteen (15) out of 22 GPs participated in the survey and it was found that “radiation oncology” was the highest priority amongst the strategic priority areas of the RCA MTS 2018-2023 and Regional Programme Framework (RPF) 2024-2029. Based on the result of the survey, RCARO invited the GPs to submit Research Project Theme (RPT) proposals on radiation oncology and received a total of 9 proposals from 8 countries.

The received proposals were reviewed by the technical experts recommended by the IAEA and RCA PAC which takes the role as the RRC for evaluation of their technical merits and the RCA requirements. According to the procedure, the result of the evaluation was reported to the RCARO SAC and the 50<sup>th</sup> GCM for the NRs’ consideration.

Upon the decision of the 50<sup>th</sup> GCM on the proposal on “Closing the Gap in Access to Radiotherapy in RCA Government Parties” proposed by INS as the RPT for the new RCA RP, RCARO invited the GPs to submit research proposals to participate in the project. A total of 9 research proposals were received from AUL, INS, MAL, MON, PHI, PAK, ROK, THA and VIE. Based on the review by the RRC, 8 countries have been confirmed to participate in the new RCARP (RCARP03): AUL, PHI and ROK as Agreement Holders and INS, MAL, MON, THA and VIE as Contract Holders.

#### **4. Assisting the Government Parties in human resource development**

##### **4.1. Provision of online education/training through the RCA e-Learning Campus**

In response to the increased demand and emphasis on digitalization of learning contents for efficient training and sustainable education, RCARO has been operating an online platform, RCA e-Learning Campus, on the RCA website. More than 130 e-Learning modules in nuclear medicine, radiation safety and e-beam technology were developed and uploaded on the platform, contributing to the enhancement of capacity of the GPs and preservation of skills related to the technology.

##### **4.1.1. Enhancement of the RCA e-Learning Campus**

RCARO has been upgrading the current RCA e-Learning Campus with the aim to offer more convenient and efficient online education utilizing advanced IT technology. In addition to the open courses of e-Learning modules that the previous RCA e-Learning Campus provided, the new one is designed to provide a dedicated platform for scheduled courses, such as closed training courses and virtual meetings for real-time activities. Moreover, users will be able to plan, check

process and results through the learning management system. Based on the feedbacks of the users, RCARO will continue improving the functions and contents of the campus, newly named RCA E-CAMPUS.

## **4.2. Capacity building through the Korean Institutes/Universities**

### **4.2.1. Supporting the RCARO/KAIST Nuclear Engineering Master's Degree Programme**

Four students from Malaysia, Sri Lanka, Philippines and Indonesia have been supported by the Programme for their study at the KAIST through online and classroom lectures.

In addition, RCARO initiated a new master's degree course in energy policy in cooperation with the KEPCO\* International Nuclear Graduate School(KINGS), an educational institute specialized in nuclear power and energy in Korea. It is a two-year course and two to five will benefit from the course, subject to the budget availability.

For the 2022 spring semester, 5 students from Bangladesh, Indonesia, Pakistan and the Philippines have been selected for their admission.

\*KEPCO: Korea Electric Power Corporation

### **4.2.2. Implementing capacity building activities on radiation technology**

In cooperation with the Korea Atomic Energy Research Institute (KAERI), RCARO hosted an integrated course covering the radiation application in thematic areas and the radiation safety on 1-12 November 2021, providing 24 e-Learning lectures. Seventeen (17) participants from 7 GPs participated in the course.

## **4.3. IAEA/RCARO training course**

An online training course was held on 22-26 November, attended by 17 participants to provide technical lectures on the radioactivity measurement and dose assessment in connection with the RCARO/ASEANTOM project.

## **4.4. RCARO Fellowship Programme**

Due to the prolonged COVID-19 pandemic, the programme could not be implemented.

## **5. Facilitating the better implementation of the RCA Programme**

### **5.1 Supporting the IAEA for RCA administrative matters**

RCARO assisted the IAEA in preparation for the 43<sup>rd</sup> NRM and the 50<sup>th</sup> GCM, including preparation of agendas, background documents and 2020 RCA annual report.

For the activities of the WG on RCA MTS Coordination, RCARO supported the WG by hosting virtual meetings in February, July and sharing its views on the issues raised at the meeting.

### **5.2. Assisting the RCA Chair for coordination of activities**

Decided by the 46<sup>th</sup> GCM on the RCARO's support to the RCA Chair, RCARO provided assistance to the RCA Chair in performing her duties required by the 43<sup>rd</sup> NRM and 50<sup>th</sup> GCM.

### **5.3. Participation in the activities of the Special Task Force (STF)**

In preparation of the 50<sup>th</sup> Anniversary of the RCA in 2022, the 48<sup>th</sup> GCM established a Special Task Force consists of the representatives of MAL, THA, VIE, CPR, JPN, ROK, IAEA and RCARO.

As a member, RCARO participated in the virtual STF meetings in February, August and November and shared the progress of the activities to be implemented by the RCARO.

### **5.4. Provision of Extra-Budgetary (EB) contribution to the IAEA**

There has been no budget contribution to the RCA projects in 2021. RCARO will continue with its effort to make extra-budgetary contributions to support the projects in need of financial support.