



REGIONAL COOPERATIVE AGREEMENT

ANNUAL REPORT 2023

RCA Regional Office
www.rcaro.org



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Acknowledgements

This RCA Annual Report is prepared by the RCA Regional Office, in cooperation with the IAEA Technical Department, Division for Asia-Pacific and 22 RCA Government Parties. Valuable input from all Lead Country Coordinators (LCCs) of the RCA Programme greatly contributed to the content of this report. Unless explicitly stated otherwise, material within this publication may be freely utilised, shared, copied, reproduced, printed, and stored on condition that proper acknowledgement is given to the IAEA as the source and copyright holder.

The entire RCA Team extends its warmest congratulations to Mr Sinh Van Hoang, RCA Focal Point since 2013 on his retirement in October 2023. As the FP overseeing the development of the first RCA Social and Economic Impact Assessments, and the RCA 50th Anniversary Events which gathered the first RCA Ministerial Level Meeting resulting in a Joint Declaration, Sinh's impacts on the RCA will continue to be showcased beyond his time as FP. The RCA Team extend its sincerest welcome to the new RCA Focal Point, Ms Khemphone (Khem) Phaokhamkeo.

This report is available for download: www.rcaro.org/arp.



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Executive Summary

Since its establishment in 1972 as the first regional agreement under the auspices of the International Atomic Energy Agency (IAEA), the Regional Cooperative Agreement (RCA) for Research Development and Training related to Nuclear Science and Technology for Asia and the Pacific has played a pivotal role in promoting regional cooperation and advancing the peaceful use of nuclear science and technology. This contribution has significantly impacted the socio-economic well-being and sustainable development of the Asia-Pacific region. The achievements were only possible through the strong support and commitment of the RCA Government Parties (GPs) and the IAEA.

The RCA celebrated its 50th Anniversary in 2022. In celebration of the 50th anniversary, the first-ever RCA Ministerial Level Meeting took place in September 2022, with the participation of over 100 high-level officials. The Ministerial Joint Declaration was unanimously adopted, highlighting the RCA's endeavours throughout the five decades and reaffirming the ownership and commitment of the RCA GPs for the future. Since its establishment, RCA has implemented a total of 180 projects, held 577 meetings and workshops and trained over 10,346 professionals through more than 670 training courses with a total budget of USD 92.2 million.

In 2023, the RCA demonstrated dedicated efforts to address multifaceted challenges by engaging in fifteen (15) active projects; five (5) projects focused on human health, three (3) projects dedicated to environmental concerns, three (3) projects centred around food and agriculture, two (2) projects in the industrial applications, one (1) project supporting RCA management, and one (1) project addressing radiation safety. This strategic approach reflects a

commitment to a more comprehensive impact on regional development and well-being in the Asia-Pacific region.

The budget allotment from the TC Fund for 2023 was (€1,912,465) with the actuals being (€1,736,609) at an Implementation Rate of about (86.70 %). RCA GPs continued supporting the RCA Programme; in 2023, Australia contributed (€90,461) in extrabudgetary contributions and the total amount of in-kind contributions from the GPs was (€849,409).

Throughout the year, forty-eight (48) RCA activities were meticulously planned and executed, including meetings, workshops, Regional Training Courses (RTC), expert missions, and home-based assignments. Specifically, fifteen (15) regional meetings, comprising mid-term and final project review meetings, and project design meetings were conducted, alongside regional workshops. A total of three-hundred-thirty-one (331) participants, including forty (40) experts, actively engaged in these events. In addition to the project-related and expert meetings, two (2) policy-level meetings were successfully conducted, namely the 45th Meeting of the National RCA Representatives (NRM) and the 52nd RCA General Conference Meeting (GCM). The success of these meetings underscores the adaptability and effectiveness of a hybrid approach - combining both physical and virtual formats to facilitate meaningful engagement and collaboration. As for regional training courses, fifteen (15) courses were held engaging a total of three-hundred-ninety-six (396) participants, including twenty (20) lecturers and experts who attended the training courses.

Examining the details of the projects that concluded in 2023, seven (7) projects (RAS0086,



RAS5087, RAS5088, RAS6096, RAS6097, RAS7035 and RAS7037) reached completion by the end of 2023, reflecting the RCA's steadfast commitment to meeting its goals. RAS0086 aimed to enhance the effective management and implementation of activities under the RCA framework. In the agriculture sector, RAS5087 and RAS5088 aligned with the RCA Medium Term Strategy (MTS) Priority Areas in Food and Agriculture, promoting food safety, security, and trade through the facilitation of food irradiation using electron beam and x-ray technology. In human health, RAS6096 and RAS6097 underscored the importance of collaborative approaches, technical cooperation, and standardised methodologies in advancing cancer care and disease control. Lastly, RAS7035 and RAS7037 responded to the challenge of groundwater contamination by refining standardised sampling protocols and analytical tools for improved accuracy.

Some of the highlighted achievements of the activities include the establishment of a professional network, the adoption of new public standards, and the fostering of new professionals. For instance, from RAS5087, Government Parties agreed to establish the International Food Irradiation Network (iFINE) to promote and expand irradiation technologies for food sterilization and plant quarantine, contributing to ensuring food security and environmental protection in the Asia Pacific region. RAS6101 organized two (2) expert missions and two (2) training courses, resulting in the adoption of recommendations from the IAEA to the respective governments. These recommendations lay the foundation for recognizing medical physicists as health professionals, highlighting the commitment to fostering regional expertise and collaboration within the RCA framework. Regarding capacity

building for professionals, RAS7040 was particularly significant for over fifty-two (52) young scientists who were directly engaged in analysing stable isotopes in water and agrochemicals to improve water resources. This project significantly contributed to advancements in water resource management and agricultural practices.

In the upcoming 2024/2025 TC Cycle, RCA plans to support six (6) new projects spanning human health, environment, and agriculture. The organization remains committed to establishing itself as a valuable partner, delivering nuclear technologies to advance socio-economic well-being and sustainable development across the Asia-Pacific region. RCA is determined to further its journey in developing regional networks.

The RCA Regional Office also conducted various cooperative activities to promote the RCA and partnerships. RCARO established the Asia-Pacific Nuclear Think-Tank to assist RCA GPs in activities related to RCA policy and information dissemination. Additionally, a new partnership project with the United States Department of Energy (US DOE) on eBeam applications has been initiated to improve the environmental quality of the Asia Pacific region. The ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM) partnership project also continued to address radiation safety concerns. RCARO supported collaborative research within the RCA through research projects RP02 and RP03. These projects aimed to tackle air and environmental pollution and address the gap in access to radiotherapy in the region. Moreover, efforts were made to enhance the RCA website, providing more comprehensive information services for the RCA stakeholders and increasing the visibility of the RCA.

RCA-AP Annual Report 2023

Chair's statement



Natascha Spark

RCA Chair,
National RCA Representative of Australia
Senior Manager
International Affairs, Chief Operating Group
Australian Nuclear Science and Technology Organisation (ANSTO)

Committed to social and economic impact
Strengthened our governance
Future focus on diversity and inclusion

Dear Valued Partners,

2023 was an operationally significant year for the Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA-AP).

We revived our technical cooperation programme following the disruptions of the global pandemic, and deepened our commitment to social and economic impact. Strategically, we set a stronger future focus on diversity and inclusion.

Nuclear science and technology are more important than ever. The intersecting challenges of the climate crisis, plastic pollutions in our oceans, increasing demands for nuclear medicine, and delivering food security for all have elevated the relevance of nuclear science and technology in addressing regional challenges.

It's something Australia as Chair – through the Australian Nuclear Science and Organisation (ANSTO), Australia's primary nuclear organisation – has been at the forefront of, and stands committed to sharing expertise across the region.

The RCA-AP responds to these challenges by delivering regional technical cooperation programmes in the fields of human health (eight projects), environment (five projects), agriculture (five projects), industry (one project) and radiation safety (one project).

We deliver these projects through the **joint cooperation** of the IAEA, National Representative teams within Government Parties along with the generosity from experts in our region in nuclear science and technology. We do this with a small budget in the most diverse and populated region of our planet.

Our projects work hard to deliver on the IAEA's flagship initiatives *Rays of Hope*, *Atoms4Food*, *NUTEC Plastics*, and *Global Water Analysis*.

Revival of our Technical Cooperation Program

In 2023, we fully revived our technical cooperation programme following the 2020-2022 years of disruption due to the global pandemic.

We saw the **return of hands-on regional training courses to enhance professional development and build regional networks, experts undertook capacity building, as well as in-person policy dialogue providing strategic oversight, transparency and accountability.**

Re-starting the programme was not without its challenges. Our technical programme leads, who generously volunteer their time to lead at the project level in each country, had competing demands. University professors, medical professionals, radiation safety specialists and industry leaders were pivoting to internal pressures as they navigated 2023. Within this environment, some technical programme leads were able to deliver RCA project milestones, whilst others were, understandably, deferred to 2024.

In 2023, we trained 744 regional practitioners through 15 regional training courses, across 15 projects and held 15 meetings.

Highlights included:

- first in-person policy dialogue since 2019 (hosted by ANSTO, Australia in Sydney)
- regional training courses in
 - cancer care to strengthen regional capability to produce cyclotron-based radiopharmaceuticals at ANSTO in Australia
 - advanced data analysis of isotopic approaches to assessment and tracing of agro-contaminants in catchments in China
 - mixing models of tracers and complementary approaches to apportion sources of contaminants in ground water in Indonesia
 - phased ultrasonic testing (PAUT) with ISO 9712 Level 2 Certification in the Republic of Korea

- train the trainers course on radio-graphic testing-digital (RT-D) Level 2 in Malaysia
- palliative radiotherapy for brain metastases and other clinical scenarios in Pakistan
- significance and importance of dosimetry system and associated uncertainty for radiation processing facilities in Thailand
- mutation by speed breeding for abiotic stress tolerance in Vienna (virtual)
- isotopic approaches to monitor sources of agro contaminants in the environment in Viet Nam
- four multi-year projects came to a close, and
- 57 pre-concept papers for the next round of projects were submitted by Government Parties

Strengthening our Governance

In 2023, we strengthened our governance through **streamlining our structure and strategies.**

With the goal of improving our effectiveness and efficiency, we reduced our working groups and committees, while remaining connected to our vision and values. We reaffirmed the Regional Programme Framework 2024-2029 as our strategy to guide the selection and development of our technical cooperation.

We agreed that the creation of any future working groups or committees be carefully considered by Government Parties, and that the balance of our effort is focused delivering our technical cooperation programme.

Deepened our understanding of our social and economic impacts

Whilst our internal stakeholders report that our projects are having impact, in 2023 we recognised the importance of communicating our reach to an external audience.

The 2022 innovation in RCA-AP programme **social and economic impact assessment** in the fields of cancer care, industry and agriculture demonstrated we are advancing the **2030 Agenda for Sustainable Development and its Sustainable Development Goals** in far-reaching ways.

Our efforts have increased the number of cancer patients using domestic radiotherapy facilities by 121% and improved cancer survival rates from 41% in 2000 to 55% in 2020. We want more social and economic impact assessments to tell our story, and inform better programming.

This shift is a **game changer**. It has placed a greater emphasis on improved performance reporting, so that the data we collect year on year at the individual project level can be harnessed to translate into our outcomes at the regional social and economic impact level. It will ensure the contributions of nuclear science and technology towards international development will be more widely recognised.

Gender diversity increases our reach

We stepped up our commitment to gender and inclusion in 2023.

We identified the **gender** of the proposed leads for the programme development phase for the 2026/2027 cycle. We found that of the 57 pre-concept proposals submitted for projects to start in 2026, only around 20% were led by women, and of those, only 25% were recommended to move forward to the next concept stage.

This compared to 75% of men-led projects being successfully recommended of the proposals proposed to move to the concept stage.

Furthermore, the committee making the recommendations comprised around 75% men.

As an immediate response, we agreed to take gender equality into account when selecting the projects to move to the final design stage during the decision-making process in 2024.

Better inclusion charts a better regional programme

We agreed that all pre-concept proposals submitted by **Least Developing Countries** and **Small Island Developing States** move to the next concept stage.

With the **value** of diversity and inclusion in mind, we agreed to conduct a review of our process for selecting and designing the regional programme for policy discussion in 2024.

Small, well-managed budget backed up by generosity of regional technical experts sets the stage for continued growth

In 2023, the total **financial budget** for the RCA-AP Programme was **EUR3.26m**.

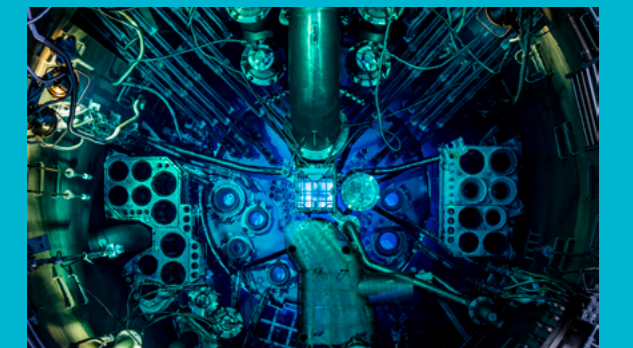
Of this amount, EUR2.3m funded 14 Technical Cooperation Projects and EUR0.80m funded RCA policy, administration and management. The funding is derived from three sources, approximately:

- EUR1.9m allocated (with actuals being EUR1,736,609) from the IAEA Technical Cooperation Fund (TCF)
- EUR1.3m Extra budgetary contributions from IAEA Member States
- EUR0.06m Government Cost Sharing.

Government Parties delivered an outstanding EUR0.8 in-kind contributions.

The 2024 forecast is EUR 2.09m, including EUR 1.7m from the IAEA TFC, EUR 0.39m from IAEA Member States (RCA Government Parties). Of this, EUR 1.99m will fund 15 Technical Cooperation Projects and EUR 0.1m will fund policy, administration and management.

Yet the budget spreadsheet does not tell the full story. Technical experts from within our Government Parties lead projects without financial compensation. They gave freely of their time to design, deliver and monitor projects. Many self-funded their travel and time. They spent their nights and weekends on virtual coordination meetings, drafting reports, responding to queries and reviewing project performance. If we were to account for their input, it would probably increase the financial value of our programme tenfold.



OPAL Reactor of ANSTO

Thank you

It was a great honour for Australia, through ANSTO, to transition as Chair from Viet Nam, through Viet Nam's Atomic Energy Institute (VINATOM), during 2023. Australia valued the grace, determination and purpose that Viet Nam brought to the RCA, especially in the delivery of the 2022 Ministerial Declaration. Australia maintained the focus on RCA growth in 2023, and stands ready to transition the Chair to China, through China Atomic Energy Authority, in May 2024.

On behalf of the National Representatives of Government Parties, we want to thank you for your support and confidence as we continue to implement and grow our technical cooperation programme so that we can deliver the social and economic returns you expect.

On behalf of my Australian counterparts and ANSTO colleagues, we thank the RCA community for your trust in our leadership, and look forward to continuing our collaborations for many years to come.

I would like to sincerely thank the RCA Community for their support and spirit of collegiality through-out the Chair year. It was an honour and delight to work with you all.



Gashaw Gebeyehu Wolde

Section Head
Division for Asia and the Pacific
International Atomic Energy Agency

In 2023, the RCA saw significant progress in post-pandemic recovery. With successful events like the 50th Anniversary celebration and Ministerial level meeting, RCA emerged resilient and forward-looking. Operations resumed fully, providing equipment, conducting 30 capacity-building activities, and reviewing key projects. A new program

launched in January 2024. The IAEA Department of Technical Cooperation, Division for Asia and the Pacific, will continue supporting RCA to maximize its socioeconomic impact. Congratulations to all for the 2023 achievements and we look forward to further cooperation in 2024.



Prinath Dias

Chair
RCA Programme Advisory Committee

Since its humble beginnings in 1972, RCA has developed into a significant regional program for Asia and the Pacific, supporting its 22 Government Parties in adopting nuclear technologies for development priorities. While largely achieving its vision, it aims to gain recognition from regional development agencies. The main mechanism for transferring well-developed nuclear technologies to the RCA GPs are the IAEA TC Programme. RCARO programs

also support technological development through research and cooperation projects. The RCA Programme Advisory Committee advises National RCA Representatives on implementing the IAEA/RCA TC program and aims for strategic project development and resourceful implementation. The PAC will continue to provide whatever assistance the National RCA Representatives expect from the PAC.



Dae Ki KIM

Director
RCA Regional Office

Following its 20th anniversary in 2022, RCARO expanded its cooperative activities to enhance RCA's visibility and viability. This included launching a new partnership projects with the US DOE on election beam applications and establishing a Policy Information Centre, along with improving the RCA information service. Additionally, RCARO continued projects on radiation safety and unique research in air quality and radiotherapy. Capacity building activities with Korean nuclear institutes aimed to

nurture young nuclear professionals. As part of RCARO's support for the RCA, it is our pleasure to prepare the 2023 RCA Annual Report, acknowledging the contributions of the IAEA and Government Parties (GPs). We thank the IAEA and GPs for their contributions and look forward that the enhancements made in this report will contribute to a better presentation of the RCA and highlight its achievements in delivering socioeconomic development to the region.

Messages from Key RCA Stakeholders



Implementation of RCA
Programme Since 1972



180
RCA Projects



577
Meetings & Workshops



673
Training Courses

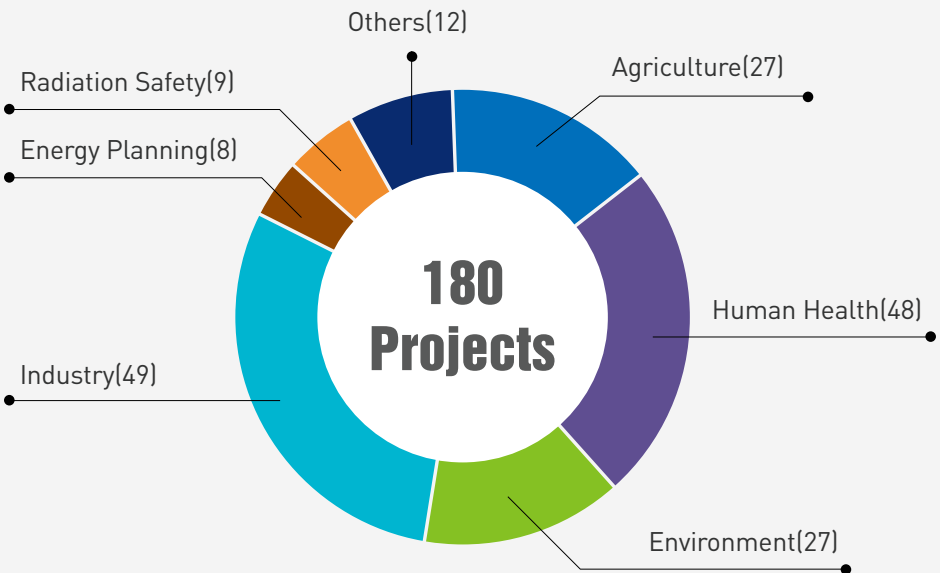


1,396
Trained Professionals

4,579
Experts and Lecturers



Total Budget:
92.2 Million US\$



RCA Programme Activities



15
RCA Projects



15
396
Training Courses
Participated



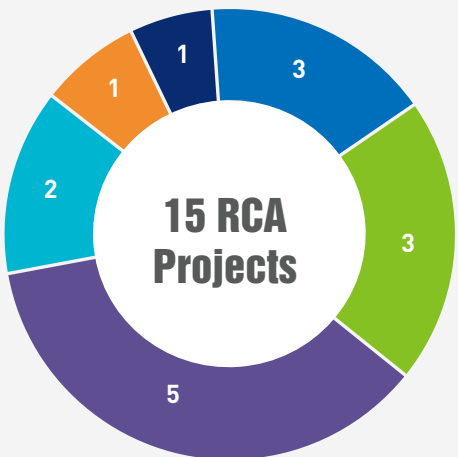
15
331
Meetings
Participated



18
122
Expert Assignments for
days

RCA Projects by Thematic Areas in 2023

- Agriculture
- Energy Planning
- Environment
- Human Health
- Industry
- Radiation Safety
- Others



48 RCA Activities 744 Participants

RCA Programme Fund

1.9 Million Euro
Budget Allocated



849,409 Euro
In-kind Contribution Contributed

90,461 Euro
Extrabudgetary Contributed

List of Acronym



ANSTO	Australian Nuclear Science and Technology Organization
APCNDT	Asia Pacific Conference for Non-Destructive Testing
ASEAN	Association of Southeast Asian Nations
ASEANTOM	ASEAN Network of Regulatory Bodies on Atomic Energy
ASPAMARD	Asia-Pacific Marine Radioactivity Database
BMS	Breeding Management System
COVID-19	Coronavirus Disease 2019
CSI	Chief Scientific Investigator
CT	Computed Tomography
DIR RCARO	Director of the RCA Regional Office
EB	Electron Beam
EPR	Electronic Patient Record
FP	Focal Person
GCM	General Conference Meeting
GP	Government Party
IAEA	International Atomic Energy Agency
IRMS	Isotope Ratio Mass Spectrometers
IRPA	International Radiation Protection Association
KAERI	Korea Atomic Energy Research Institute
KIRAMS	Korea Institute of Radiological & Medical Sciences
LCC	Lead Country Coordinator
MARIS	Marine Radioactivity Information System
MTS	Medium Term Strategy
MTSC	Medium-Term Strategy Coordination
NDT	Non-Destructive Testing
NPC	National Project Coordinator
NR	National RCA Representative
NRM	Regional Meeting of the National RCA Representatives
PCMF	Programme Cycle Management Framework
PPAR	Project Progress Assessment Report
RCA	Regional Cooperative Agreement
RCA PAC	RCA programme Advisory Committee
RCARO	RCA Regional Office
RPF	Regional Program Framework
SAC	Standing Advisory Committee
SDGs	Sustainable Development Goals
STF	Special Task Force
TC	Technical Cooperation
TCDC	Technical Cooperation among Developing Countries
TO	Technical Officer
UNOSSC	United Nations Office for South-South Cooperation
WG	Working Group

ABOUT RCA

What's RCA

The Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) is an intergovernmental agreement in the East Asia and Pacific region, operating under the auspices of the IAEA.

There are twenty-two (22) RCA Government Parties in the RCA. RCA GPs undertake, in cooperation with each other and with the IAEA, the RCA Programme to promote and coordinate cooperative research, development and training

projects in nuclear science and technology that can improve the living conditions of the people and contribute to preserving the nature in the region. The GPs are represented by the National RCA Representatives (NRs) and have two policy meetings namely the Meeting of National RCA Representatives (NRM) and the General Conference Meeting (GCM) to address policy issues, development priorities, overall management of the RCA Programme and other relevant issues.

RCA Government Parties



The RCA celebrated its 50th Anniversary in 2022. Since its establishment, the RCA has served to promote regional cooperation and disseminate the peaceful uses of nuclear science and technology, contributing to the socio-economic well-being of the Asia-Pacific region. RCA has implemented a total of 180 projects, held 577 meetings and workshops and trained over 10,346 professionals through more than 670 training courses with a total budget of USD 92.2 Million invested during the last five decades.

With the aim to contribute to achieving the UN Sustainable Development Goals for Asia and the Pacific, the RCA Programme has been implemented in the areas of RCA Strategic Priorities including Agriculture, Environment, Human Health, Industry, Radiation Safety and Energy Planning. Covering various subjects related to isotope and radiation applications, the RCA Programme consists of projects and activities to address the development needs of the GPs through diversified approaches such as regional training courses, expert missions, consultations and meetings to enhance the

capability for utilising nuclear technology. Research Projects also involve coordinated research networks of national research institutions of the RCA to conduct research on themes or problems that are relevant to or can be resolved with nuclear science and technology. Other Cooperative Activities offer flexible means to complement the RCA Programme or respond to ad hoc needs in a timely manner.

In commemoration of the 30th Anniversary of the RCA and to increase the ownership of the RCA GPs, the RCA Regional Office was established in 2002, in Daejeon, Republic of Korea, supported by the Korean Government. To fulfil its mandate to increase the visibility and viability of the RCA, RCARO has undertaken various cooperative activities for the RCA. Over the past two decades, RCARO has implemented partnership projects, RCA Research Projects, and RCA promotional activities in a way that would secure extra funding from regional/international donors, and advocate the peaceful uses of nuclear science and technology to address the needs of the RCA GPs.



RCA Government Parties



Vision

The RCA shall be recognized as an effective partner in providing nuclear technologies that enhance socioeconomic well-being and contribute to sustainable development in the region.

Mission

To identify and implement nuclear technologies for regional needs

To encourage sustainability of nuclear technology capacities in RCA GPs

To coordinate cooperative research in nuclear science and technology

To promote the benefits of nuclear technologies and identify funding mechanisms

To develop regional networks for the exchange of technologies, training and equipment

For more information please visit the RCA website: www.rcaro.org.

2023 RCA Programme

Thematic Sector	Project Number	Project Title	Lead Country	Implementation Period
Others (Management and Implementation)	RAS0086	Enhancing the Management and Implementation of Activities under the Framework	ROK	2020-2023
Industry	RAS1028	Improving the Quality Management Practices in Radiation Processing Facilities for Better Performance and Applications	MAL	2022-2025
	RAS1029	Enhancing Regional Capabilities in Advanced Non-Destructive Testing Techniques for Improved Safety and Inspection Performance in Industries	MAL	2023-2026
Agriculture	RAS5087	Promoting Food Irradiation by Electron Beam and X-Ray Technology to Enhance Food Safety, Security and Trade	VIE	2020-2023
	RAS5088	Enhancing Crop Productivity and Quality through Mutation by Speed Breeding	CPR	2021-2025
	RAS5091	Assessing and Mitigating Agro-Contaminants to Improve Water Quality and Soil Productivity in Catchments Using Integrated Isotopic Approaches	AUL	2022-2025
Human Health	RAS6096	Empowering Regional Collaboration among Radiotherapy Professionals through Online Clinical Networks	NZE	2020-2023
	RAS6097	Enhancing Capacity and Capability for the Production of Cyclotron-Based Radiopharmaceuticals	ROK	2020-2023
	RAS6098	Standardizing Radiotherapy in Palliative Care	JPN	2022-2025
	RAS6100	Strengthening Clinical Application of Hypofractionated Radiotherapy	ROK	2022-2025
	RAS6101	Improving the Quality and Safety of Radiation Medicine through Medical Physicist Education and Training	CPR	2022-2025
Environment	RAS7035	Enhancing Regional Capability for the Effective Management of Ground Water Resources Using Isotopic Techniques	CPR	2020-2023
	RAS7037	Enhancing Wetland Management and Sustainable Conservation Planning	AUL	2020-2023
	RAS7040	Improving Water Resources Management Practices by Enhancing the Regional Collaboration in Environmental Isotope Analysis and Applications	VIE	2022-2025
Radiation Safety	RAS9092	Strengthening the Capacity to Respond to Radiological Emergencies of Category II and III Facilities	ROK	2020-2023

" For more details please refer to Annex 1"

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REGIONAL COOPERATIVE AGREEMENT

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SECTION 1 - OVERVIEW OF THE RCA PROGRAMME IN 2023

Section 1 provides a comprehensive overview of the RCA Programme in 2023, detailing its management and implementations, financial and in-kind contributions, policy meetings, and a summary of RCARO activities, offering valuable insights into the programmes' scope and achievements throughout the year.

OVERVIEW OF THE RCA PROGRAMME IN 2023

1. Summary of the RCA Programme in 2023

In 2023, a total of fifteen (15) active projects were undertaken, each falling into distinct categories: five (5) projects focused on human health, three (3) projects dedicated to environmental concerns, three (3) projects centred around food and agriculture, two (2) projects in the realm of industrial applications, one (1) project supporting RCA management, and one (1) project addressing radiation safety. Diversifying projects across various categories highlights a strategic approach, demonstrating a comprehensive effort to address multifaceted challenges. Notably, seven (7) projects (RAS0086, RAS5087, RAS5088, RAS6096, RAS6097, RAS7035, and RAS7037) reached completion by the end of 2023, reflecting the RCA's steadfast commitment to meeting its goals.

Additionally, two (2) projects organized and run by RCARO successfully concluded their journey. RCARP01 and RCARP02 aimed to assess the impact of industrial activities on air quality and its surrounding environment in the Asia Pacific region. Beyond immediate outcomes, these initiatives involved over 46 stakeholders, spanning 11 countries, contributing not only to knowledge enhancement but also leaving a lasting impact on expertise and understanding across diverse regions.

A comprehensive overview of all ongoing projects is provided in the upcoming Section 2, with detailed information accessible on the IAEA web-based platform Programme Cycle Management Framework (PCMF).

The list of RCA projects in 2023 is presented in Annex 1.

Throughout the year, forty-eight (48) RCA activities were meticulously planned and executed, including meetings, workshops, Regional Training Courses (RTC), expert missions, and home-based assignments.

Taking advantage of the relaxation of travel restrictions due to COVID-19, a combination

of physical events and virtual sessions were implemented. Specifically, fifteen (15) regional meetings, comprising mid-term and final project review meetings, and project design meetings were conducted, alongside regional workshops. A total of three-hundred-thirty-one (331) participants, including forty (40) experts, actively engaged in these events. In addition to the project-related and expert meetings, two (2) policy-level meetings were successfully conducted, namely the 45th Meeting of the National RCA Representatives (NRM) and the 52nd RCA General Conference Meeting (GCM). The success of these meetings underscores the adaptability and effectiveness of a hybrid approach - combining both physical and virtual formats to facilitate meaningful engagement and collaboration.

As for regional training courses, fifteen (15) courses were held engaging a total of three-hundred-ninety-six (396) participants, including twenty (20) lecturers and experts who attended the training courses.

Participation by GPs in RCA events in 2023 is presented in Annexes 2a-b.

In 2023, there were eighteen (18) expert-engaged activities including expert missions and home-based assignments. Twelve (12) expert missions were conducted, providing crucial technical assistance to the GPs to augment their active involvement in RCA projects. These missions collectively spanned a total duration of fifty-seven (57) expert days. Out of the twelve (12) experts enlisted for these missions, eleven (11) were sourced from the RCA GPs. Furthermore, six (6) home-based assignments were executed, with three (3) of the five (5) experts recruited from the region. The cumulative expert days dedicated to home-based assignments amounted to sixty-five (65) days. These endeavours underline the commitment to fostering regional expertise and collaboration within the RCA framework.

RCA expert missions and home-based assignments in 2023 are listed in Annexes 2c-d.

2. Management and Implementation of the RCA Programme in 2023

2.1 Summary of Financial and In-Kind Contributions

The budget allotment from the TC Fund for 2023 was (€1,912,465). The encumbrances and actuals in 2023 were (€1,736,609) at an Implementation Rate of about (86.70 %).

GPs continued supporting the RCA programme through extrabudgetary contributions and in-kind contributions. In 2023, a total of € 90,461 in extrabudgetary contributions were received from Australia. When cumulated, the overall extrabudgetary contributions from 2015 to 2023 amount to € 2,964,745.

Allocations of extrabudgetary contributions to RCA projects 2015-2023 are shown in Annex 3.

In-kind contributions have been recognised since the RCA Agreement commenced in 1972. In line with TC practice, In-kind contributions are understood as cost-free goods and/or services provided by a Party (Donor) for the benefit of one or other Parties (Recipients) in implementing a specific project. The RCA GPs have agreed that for reporting purposes, the financial contribution of each RCA GP to the RCA programme be calculated based on an adopted and non-discriminatory measure of the In-kind contribution and presented in the RCA Annual Reports. The total amount of In-kind contributions made by the RCA GPs was calculated as in 2023.

Detailed account of In-kind contributions per RCA GP is shown in Annex 4.

2.2 Planned Regional Events in 2024

In 2024, a total of (15) RCA projects are being implemented, including (7) projects that were

initiated in the same year. As the travel restriction has been lifted, all events of the project activities, including project coordination and review meetings, workshops, and training courses, will be carried out both virtually and physically as it was before COVID-19, to achieve the set objectives and complete according to the project timelines. Indicative plan for RCA regional events in 2024 is given in Annex 5.

2.3 Progress Monitoring and Reporting

Progress monitoring and reporting of the projects was undertaken through the annual progress reports by National Project Coordinators (NPCs) and the consolidated Project Progress Assessment Reports (PPARs) were timely submitted by LCCs via the IAEA platform <https://tcreports.iaea.org>. To continue this good practice, NRs are requested to ensure that NPCs submit national project reports to LCCs in time so that LCCs have sufficient inputs and time to consolidate and submit PPARs to the IAEA. NPCs are requested to submit annual project progress reports to LCCs in a full and timely manner, preferably by 10 January every year, so that LCCs have enough time for review and preparation for Project Progress Achievement Reports (PPARs) to be submitted on the TC Report platform (<https://tcreports.iaea.org/>) by 31 January every year.

The progress of the projects was reviewed at the 45th Meeting of the National RCA Representatives and the 52nd RCA General Conference Meeting, mainly by written reports due to the time limit of virtual meetings.

2.4 Challenges in Implementation

While the RCA programme was successfully implemented in 2023, several challenges and

areas for improvement emerged. Efforts were stressed to enhance programme development by fostering increased improvement of NRs in identifying high-priority regional projects. This includes allowing sufficient time for consultation during the NRMs to achieve a more balanced approach among thematic sectors, facilitate effective long-term planning, and identify emerging needs. The issue of an excessive number of pre-concepts was highlighted, prompting the need for a more streamlined screening process. Furthermore, the issue of a lack of information on RCA Programme was brought to attention, hindering the preparation of the annual report and acquisition of project data. Enhanced collaboration from the key RCA project stakeholders, such as LCCs is required for providing the project information to the RCARO to improve the RCA information service and prepare relevant materials for the RCA.

3. Policy Meetings in 2023

Two RCA Policy Level Meetings were held in 2023. The list of National RCA Representatives in 2023 is shown in Annex 6.

The 45th Meeting of the National RCA Representatives (NRM), 9-11 May 2023, Sydney, Australia

The 45th Meeting of the National RCA Representatives (NRM) was held in Sydney, Australia from 9th to 11th May 2023. The Meeting marked a significant moment with the unanimous election of Ms. Natascha Spark as the new RCA Chair. The Meeting acknowledged the report on the follow-up actions of the 51st GCM presented by the RCA-FP. Notably, there was a recognition of the importance of outcome reporting for assessing RCA TC Project effectiveness, emphasizing the need for social and economic impact assessments. To facilitate this, the Meeting recommended regular follow-up reporting by GPs and closer collaboration with

LCCs and NPCs to collect comprehensive data.

In terms of programme development, the Meeting endorsed recommendations by the RCA PAC, emphasizing greater involvement of the RCA NRs in identifying high-priority projects and reducing the number of Pre-Concepts through better screening. The Meeting also approved recommendations related to the implementation and monitoring of RCA projects, advocating for recommencing presentations on project progress at NRMs and establishing a platform on the RCA website for progress reports. Additionally, the Meeting highlighted the importance of improving consultations between NR, LCCs, and NPCs.

The Meeting took note of the report on the 2019-2023 MTS Coordination and the 2023 work plan of the WG, encouraging feedback on proposed TORs for new committees. It endorsed a face-to-face WG meeting in July 2023, subject to budget availability. The Meeting appreciated RCARO's contributions, recommending an introductory workshop and a comprehensive booklet for RCA NRs to familiarize themselves with their roles and responsibilities. While consensus was not reached on the proposed scholarship programme, the Meeting encouraged GPs to explore domestic and bilateral/multilateral scholarship programmes.

The Meeting reviewed the discussions on the establishment of a Network of National Nuclear Research Institutes (NNRIs) and organizing a forum on Technology Transfer/Diffusion of Proven Nuclear Technologies. Government Parties were invited to provide comments on the concept papers, and the Meeting looked forward to the remaining GPs depositing their instrument of acceptance for the 2017 RCA to the IAEA. The Meeting concluded with a note that the 52nd GCM will be held on 22nd September 2023 and confirmed that the 46th NRM will be held in China in 2024 with the specific dates and venue to be confirmed in due course.

The 52nd RCA General Conference Meeting (GCM), 22 September 2023, IAEA Headquarters

The 52nd RCA General Conference Meeting (GCM) was held on 22 September 2023 at the IAEA Headquarters in Vienna, Austria. The Meeting focused on the RCA Programme, noting that 18 events had been implemented in 2023, with 13 more scheduled by year-end and two postponed to Q1 of 2024.

For ongoing projects, the RCA National Representatives (NRs) were urged to collaborate with their National Project Coordinators (NPCs), ensuring effective project execution and timely submission of Project Progress Assessment Reports (PPARs). Similarly, NRs of the Lead Countries were requested to support and advise their LCCs and facilitate the submission of annual project progress reports and highlights of their projects in 2023. Planning for 2024 included encouraging NRs to involve NPCs in hosting regional events and finalizing event lists by the end of October 2023, with seven designs for the RCA Programme 2024-2025 submitted for approval. To ensure prompt implementation of new projects, the Meeting requested the NRs to submit Project Participation Forms (PPFs) by December 2023, and LCCs were advised to coordinate project meetings with IAEA TOs and RCA FP in early 2024.

The Meeting acknowledged the report by the RCA PAC Chair, praising the efforts in reviewing pre-concepts and emphasizing the importance of gender equality in the project development. Endorsing the advancement and merging of pre-concepts recommended by the RCA PAC, the Meeting resulted in 22 project concepts. Recommendations approved included continuing the Regional Programme Framework 2024-2029 and producing a one-page plan alongside an MTS. The Meeting supported the RCA TC Programme as a standing

item on the NRM agenda, suggested rapid reviews for addressing important issues, and recommended training for NRs on programme lifecycle stages to enhance ownership and sustainability.

In addition, it was confirmed that the 46th NRM would be held in Beijing, China, in 2024, with specific dates to be confirmed and announced in due course. The Meeting concluded with expressions of appreciation for the progress made across various domains, gratitude extended to stakeholders, and a reaffirmation of the importance of resource mobilization for the RCA programme.

The main decisions and outcomes of the policy-level meetings are given in Annex 7.

3. Summary of the RCA Regional Office (RCARO) Activities Related to Promotional and Other Non-technical Activities in 2023

In the process of transitioning to the next 20 years, RCARO outlined its future vision and strategies across five strategic pillars: establishing the Asia-Pacific nuclear think tank, expanding partnerships with RCA stakeholders, supporting technical advancement through R&D cooperation, developing an integrated information system, and nurturing the next generation through quality education programs.

To begin, RCARO initiated the establishment of the Asia-Pacific Nuclear Think-Tank, reforming its organizational structure to include a policy and information centre. This centre aims to assist various stakeholders, including the IAEA Secretariat, RCA Working Groups/Committees, and the RCA Chair. Additionally, RCARO drafted a guidebook on the RCA and RCA operating procedures.

Expanding its influence, RCARO broadened the horizon of the RCA stakeholders in the region and beyond by developing the concept for a new partnership project with the US DOE. This project, spanning 2024-2028, seeks to improve environmental quality in the Asia-Pacific region by supporting the establishment of eBeam infrastructure. The First Project Coordination Meeting was held in Bangkok, Thailand on 12-15 December 2023, with more than eighty (80) representatives from the twenty-one (21) RCA Government Parties. In addition, visual manuals and handbooks were developed to enhance emergency preparedness and response capabilities in partnership with the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM).

Moreover, RCARO continued its support for cooperative research activities through RCA RP02 and RCA RP03, as the only research projects of the RCA Programme. This year, research coordination meetings and technical workshops were held inviting Chief Scientific Investigators of the participating countries in the fields of air pollution and radiotherapy. The events provided a forum for networking and knowledge sharing among the experts and facilitated R&D in the relevant fields. With RP02 completed in 2023, RCARO is in the process of drafting an achievement report for publication in the first half of 2024. Beyond the immediate outcomes of conducting the elemental analysis of various pollutant sources from over 13,000 environmental samples collected, this initiative benefited the governments and relevant stakeholders in formulating appropriate policies/actions to reduce pollution and its impact on the environment by providing critical data on pollution sources analysed by nuclear analytical techniques.

In its fourth strategic initiative, RCARO launched

the RCA Integrated Information System aiming to provide comprehensive information on the RCA and the overall status of NS&T in the Asia-Pacific region. The reformed RCA website now serves as the website, the NS&T Data Hub, the RCA E-CAMPUS, and RCARO e-Management.

Concluding its efforts, RCARO conducted various capacity-building activities and trained more than 1,300 professionals in the application of nuclear science and technology since its establishment. The RCARO Scholarship Programme supports Master's and PhD students in cooperation with leading Korean institutes: KAIST, KINGS, and UST. Additionally, a new Master's degree and PhD programme with the University of Science and Technology (UST) was launched, accepting ten students to start their studies in the spring semester of 2024.

The RCARO activities related to promotional and other non-technical activities in 2023 are given in Annex 8.



REGIONAL COOPERATIVE AGREEMENT

ANNUAL REPORT 2023

SECTION 2 - DETAILS OF THE TECHNICAL PROGRAMME IN 2023

Section 2 is structured into two main sections: 2.1 Completed Project in 2023 and 2.2 Ongoing Projects in 2023, each encompassing six thematic sectors including agriculture, energy planning, environment, human health, industry, radiation safety, and others. Within each project, information is meticulously presented, starting with the status of achievement based on the Logical Framework Matrix (LFM), followed by project activities, and highlights from the year 2023.

2.1 Completed Projects in 2023

In 2023, a total of seven (7) projects successfully concluded their journey, leaving an indelible mark across diverse sectors including management, agriculture, human health, and the environment. The following highlights offer an overview of the completed RCA projects, specifically focusing on the project activities and noteworthy achievements that have emerged from these dedicated endeavours.

1. OTHERS (Management and Implementation)





RAS0086	Enhancing the Management and Implementation of Activities under the Framework
 Objective	To enhance the overall continuing development, improvement and sustainability of the RCA and its programme to support the RCA MTS 2018-2023 and the related UN Sustainable Development Goals (SDGs)



| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Upgraded and updated documented RCA policies, procedures and practices.	Implementation of the decisions made at the NRMs and GCMs.	On target / Behind target/ Completed Updated RCA policies procedures and practices are implemented at the NRMs and GCMs.
Output 2 Proposed mechanisms to increase synergies between RCA and other IAEA TC initiatives and frameworks.	Implementation of the decisions made at the NRMs and GCMs concerning agreements reached between the RCA and IAEA TC on the mechanism to increase the synergies.	On target / Behind target/ Completed Decisions made at the NRMs and GMS on the mechanism to increase the synergies between the RCA and IAEA TC are successfully implemented.
Output 3 Support of newly joining GPs and LDCs.	Implementation of specific actions to address the identified training/information needs of newly joining GPs and LDCs.	On target / Behind target/ Completed Specific actions to address the identified training and information needs for newly joining GPs and LDCs are implemented as planned.
Output 4 Social and economic impact assessment of the RCA programme conducted.	Meetings and expert missions to conduct social and economic impact assessments implemented.	On target / Behind target/ Completed Meetings to conduct social and economic impact assessments are conducted.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Meeting	RCA Project Design Meeting	To review and enhance the draft project documented under the RCA programme for the 2024-2025 TC cycle, agree on follow-up actions to complete and submit high-quality RCA project documents to the IAEA on or before the scheduled deadline of 17 May 2023.	6-10 Feb.	Austria
 Meeting	RCA Chairs Meeting	To discuss and propose action plans for deployment and execution of the RCA Declaration.	27 Feb. - 2 Mar.	Viet Nam
 Meeting	45th Regional Meeting of National RCA Representatives	To discuss strategy, policy, and management related to the RCA Declaration adopted in 2022, Vienna, as well as the execution of the RCA Medium-Term Strategy, RCA Programme implementation, planning for 2024-2025, and the operation of the RCARO.	8-12 May.	Australia
 Meeting	RCA MTSC WG Meeting	To conclude performance indicators and criteria, gather data sources, formulate recommendations for the RCA GOR strategic review in 2024, discuss WG MTSC recommendations, and review/update the WG MTSC Work Plan for 2023.	14-18 Aug.	Austria
 Meeting	RCA PAC Meeting	To discuss and propose appropriate measures to enhance the management of the RCA programme.	18-20 Sep.	Austria
 Meeting	RCA Chair and RCARO SAC Meeting	To discuss and review the progress, status and future plan of the RCARO activities including the RAS0086 project.	21 Sep.	Austria
 Meeting	52nd RCA General Conference Meeting	To discuss and agree on strategy, policy, and management issues under the RCA, the implementation of the RCA programme, the operation of the RCA Regional Office, as well as other relevant issues.	22 Sep.	Austria

| Project Highlights for 2023

Throughout 2023, the project actively contributed to support the National RCA Representatives, Working Groups and the Programme Advisory Committee (PAC). Initiating the year with the RCA Project Design Meeting in Austria, the project extensively reviewed and enhanced the draft project documentation for the 2024-2025 TC cycle, aiming to submit high-quality documents to the IAEA by May 17, 2023. Subsequent events included the RCA Chairs Meeting in Viet Nam, which focused on proposing action plans for the deployment and execution of the RCA Declaration, and the 4th Regional Meeting of National RCA Representatives (NRM) in Australia, which



addressed strategy, policy, and management issues related to the RCA Declaration and the Medium-Term Strategy 2018-2023. The MTSC WG Meeting in Austria played a crucial role in finalizing performance indicators, target criteria, and performance levels for the final review of the MTS 2018-2023, as well as formulating recommendations for the strategic review of the RCA GOR in 2024. The year concluded with the 52nd RCA General Conference Meeting where discussion centred around strategy, policy, and management issues, emphasizing the commitment to the successful implementation of the RCA programme and its ongoing impact.



The 45th NRM, 9-11 May 2023, Sydney, Australia



The 52nd GCM, September 2023, IAEA, Austria

2. AGRICULTURE

RAS5087

Promoting Food Irradiation by Electron Beam and X-Ray Technology to Enhance Food Safety, Security, and Trade



Objective

To enhance food safety and trade in the region through developing and promoting electron beam and x-ray technologies for food irradiation.







Final Project Review Meeting “Promoting Food Irradiation by Electron Beam and X-Ray Technology to Enhance Food Safety, Security and Trade”, Hanoi, Viet Nam, 20 Oct - 3 Nov, 2023

Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project initiation completed and national project plans generated	Work plan reviewed and adopted Project teams and national plans finalised within 6 first months and forwarded to LCC and RCA Focal Person by end year 1, Q2.	On target / Behind target/ Completed <ul style="list-style-type: none">The project teams were nominated and the work plan was reviewed and adopted by all participating countries at the virtual launch of the project in September 2020.The results of the project implementation were discussed and assessed during the final review meeting organized in 2023.
Output 2 A comparative analysis of different radiation modalities (gamma, EB, X-ray and methods under development) completed and solutions to key technical barriers to the establishment of EB/X-ray facilities demonstrated.	a) Analysis circulated to all participating countries by year 1, Q2. b) Two inter-comparison exercises in dosimetry for irradiated food completed and assessed (year 2/Q1 to year 3/Q4) c) Recommendation to harmonize food regulations based on a maximum energy of X-rays used for food irradiation to be 7.5 MeV agreed by year 2, Q3. d) Directory of EB/X-ray equipment suppliers by end of year 2/Q2.	On target / Behind target/ Completed <ul style="list-style-type: none">Regional Training Course was held virtually from 30 August to 1 September 2021. Various documents related to inter-comparison in dosimetry for food irradiation and EB/X-ray dosimetry systems were introduced. Additionally, discussions were held on the current dosimetry practices in the region. Recommendations to harmonize regulations on food irradiation based on the 7.5 MeV X-ray were circulated for approval.By the end of 2023, the inter-comparison exercises in dosimetry for irradiated food will be performed in Vietnam and Thailand.
Output 3 Food industry engaged by setting up national and regional for a for the food trade that use updated resource materials and identify industry needs more fully.	Two regional workshops held with food trade representatives in year 2/Q2 and year 3/Q4). National fora completed by end of year 3, Q4. New B/X-ray facilities are installed and/or operated for food irradiation.	On target / Behind target /Completed <ul style="list-style-type: none">New EB/X-ray facilities were installed and operated for food in the RCA region (2 in Vietnam, 1 in Thailand, and some in China)National seminars and forums were held in some GPs to promote EB/X-ray technology for food irradiation.Representatives from selected member states were supported to participate in the International Food Irradiation Symposium.
Output 4 A resource document providing an overview of EB and X-ray food irradiation technology for the food industry submitted as an IAEA publication.	Documented endorsed at final project meeting and forwarded to IAEA publications section by end of year 4, Q2.	On target / Behind target/Completed <ul style="list-style-type: none">In 2022, the current status of the development of EB/X-ray technology for food irradiation was updated, and the document was prepared on time.The results and achievements at the national level were collected and submitted to TOs and LCCs for preparing the resource documents.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	HBA on electron beam and X-ray irradiation and dosimetry system at 3 MeV electron beam machine for sanitary and phytosanitary purposes	To conduct assignment on electron beam and X-ray irradiation and dosimetry system at 3 MeV electron beam (EB) machine for sanitary (1-10 kGy) and phytosanitary (< 1 kGy) purposes.	27-31 Mar.	France
 Expert	Expert Mission on Validation and Verification of Dosimetry System at 3 MeV Electron Beam Machine for Sanitary and Phytosanitary Purposes	To review the validation and verification of the dosimetry system at a 3 MeV electron beam (EB) machine.	03-06 Apr.	France
 Expert	TC Sponsered Participation on International Food Irradiation Symposium	TC sponsored participation in the International Food Irradiation Symposium in Dallas under RAS5087.	26-28 Sep.	USA
 Meeting	Final Project Review Meeting	To review project RAS5087, assess results, and agree on a follow-up plan for sustaining and promoting EB technology.	30 Oct.- 3 Nov.	Viet Nam

| Project Highlights for 2023

In 2023, three expert missions were conducted, comprising one home-based assignment, one on-site expert mission, and one TC-sponsored participation in Dallas, U.S. The Final Project Review Meeting took place in Hanoi, Viet Nam, from October 30th to November 3rd, 2023, aimed at reviewing activities, summarizing achievements, and extracting lessons learned from the RCA regions. A draft of the meeting report has been prepared and distributed to all GPs for their review. The document is set to be submitted to the Agency for consideration of publication in the near future. During the meeting, all GPs unanimously agreed to establish the International Food Irradiation Network (iFINE). The primary objective of iFINE is to promote, expand, and

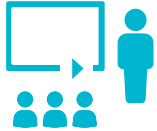
achieve highly efficient and safe applications of irradiation technologies for plant quarantine and food sterilization processes. The ultimate goal is to contribute significantly to ensuring food security and environmental protection.



Regional Workshop on "Food Irradiation Using Electron Beam/ X-ray Technology", Cairns City, Australia, 1-5 Aug, 2023



RAS5088	Enhancing Crop Productivity and Quality through Mutation by Speed Breeding
 Objective	To improve food security in the Asia Pacific region through faster release of mutant varieties with improved crop productivity and quality.

| Status of Achievement based on LFM



Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management structure established.	Project activities and budget are implemented and utilized as planned	On target / Behind target/Completed <ul style="list-style-type: none">The project teams were nominated, and the work plan was reviewed and adopted by all participating countries at the kick-off meeting at the start of the project.A mid-term project review meeting held in China on 16-20 October 2023, discussed and reviewed the achievements as well as finalization of priorities for the remaining project period.
Output 2 Personnel trained in mutation by speed breeding (MbyS) protocols in GPs institutions	6 researchers per GP are to be trained on MbyS by the end of the project	On target / Behind target/Completed <ul style="list-style-type: none">During the project implementation, at least 70 researchers have been trained through the following training courses:RTC was held on 7 to 18, August 2023, in Jakarta, Indonesia. Twenty-four (24) participants from 14 different RCA countries were trained through lectures and lab practices.
Output 3 Mutation by speed breeding (MbyS) protocols established in GPs.	At least 4 protocols based on local facilities and adopted to local environments to be developed by the efforts of all participating GPs by the end of project	On target / Behind target/Completed <ul style="list-style-type: none">In the process of developing.Several countries have protocols for marker-assisted mutation breeding and double haploid techniques. Malaysia's LED-lit speed breeding lab boosts tomato growth. China advances four generations of winter wheat in a year, while Korea tests a high-throughput phenotyping platform.
Output 4 Promising mutant lines from mutation by speed breeding (MbyS) protocols by GPs.	At least 5 mutant lines developed by MbyS approach by the end of the project.	On target / Behind target/Completed <ul style="list-style-type: none">Twenty-four (24) mutant varieties have been developed using the speed breeding method, demonstrating improvement in yield and quality traits.A number of advanced mutant lines and mutant populations have been developed for further evaluation of desired traits.

Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Training Course	RTC on Mutation by Speed Breeding (MbyS) for Abiotic Stress Tolerance	To provide knowledge, experience, and skills in establishing national plant breeding programmes.	7-18 Aug.	Virtual
 Meeting	Mid-Term Project Review Meeting	To review the implementation progress of the project RAS5088, discuss and update the work plan for 2023-2024.	10-20 Oct.	China

Project Highlights for 2023

An in-person RTC and a mid-term review meeting were conducted, aimed at enhancing human resources in member states regarding plant mutation through speed breeding techniques. A total of twenty-four (24) mutant varieties, produced using the speed breeding method and exhibiting enhanced yield and quality traits, were released and distributed to farmers. This initiative

aims to bolster food security across various crops. Furthermore, numerous advanced mutant lines and populations have been cultivated for further assessment of desired traits. Project stakeholders emphasized the necessity of ongoing project activities to facilitate the continued development of mutant lines and varieties, thereby ensuring the project’s sustainability.




RTC on Mutation by Speed Breeding (MbyS) for Abiotic Stress Tolerance, 7-18 Aug, 2023



Mid-Term Project Review Meeting of RAS5088, Beijing, China, 16-20 October, 2023

3. HUMAN HEALTH

RAS6096	Empowering Regional Collaboration among Radiotherapy Professionals through Online Clinical Networks
 Objective	To ensure that cancers in regional cooperative agreement (RCA) low and middle-income countries (LMICs) are treated in line with internationally accepted standards of care and tailored to the individual patient and to local resources to improve survival and quality of life of cancer patients.



Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Infrastructure for online regional network has been established and is functional (including secretariat, host organization(s), software, and expert pool).	<ul style="list-style-type: none">Percentage of VTBs with both an agenda circulated beforehand and minutes circulated to participants.Key components of infrastructure* in place* Designation of Secretariat and Host Organization(s); Web Conferencing Software; Designation of Expert Pool.	
Output 2 The system (or mechanism) to support radiotherapy (RT) professionals and trainees in making clinical decisions about patients has been established.	<ul style="list-style-type: none">Percentage of presenting oncologists, who feel clinical decision-making was supported.Number of GPs participating Radiotherapy Professionals submitting cases per yearNumber of clinical cases presented per quarter.	
Output 3 Radiotherapy professionals and trainees have been educated about resource-appropriate management for specific clinical scenarios.	<ul style="list-style-type: none">Percentage of VTBs each year that include an educational presentation by a presenter from a target country, (as defined in the Project Document) to promote TCDC.Percentage of VTBs each year that includes lecturesPercentage of meeting participants who feel educational lectures during VTBs were relevant to their practice setting.	

Output 4

Radiotherapy professionals and trainees participate in online educational activities which include other, non-medical aspects of radiotherapy.

Frequency of additional online educational activities.

| Project Highlights for 2023

RAS6097

Enhancing Capacity and Capability for the Production of Cyclotron-Based Radiopharmaceuticals



Objective

To enhance disease control in the Asia-Pacific region through strengthening the capacity and capability for qualified cyclotron-produced radiopharmaceuticals for imaging and treatment.

| Status of Achievement based on LFM



Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project successfully implemented	Project completed on schedule and on budget.	On target / Behind target/ Completed <ul style="list-style-type: none">All planned items have now been fully completed within the project period. The final project review meeting organized in December 2023 reviewed the implementation of the project, assessed the achieved results, and agreed on follow-up cooperative activities to ensure the sustainability of the achieved results of the project.
Output 2 Establishment of core group of trained personnel for the production of cyclotron-based radiopharmaceuticals.	<ul style="list-style-type: none">86 train-the-trainers from 4 RTCs by 4Q 2023.206 trainees trained at national training activities by Q4 2023.	On target / Behind target/ Completed <ul style="list-style-type: none">167 trainers were trained during the RTCs. 2,393 trainees trained at the national training activity in the Member States.

Output 3





New capabilities for the production of cyclotron-based radiopharmaceuticals.

Production of new radiopharmaceuticals in at least 4 Member States by 4Q 2023.

On target / **Behind target**/Completed

- Radiopharmaceuticals with NaF were newly produced in Mongolia, and Myanmar. Due to the COVID-19 pandemic, the expert mission to the Member States was blocked.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	Expert Mission on Setting up of a Medical Cyclotron and PET Radiopharmaceuticals production equipment	To support setting up on medical cyclotron and PET Radiopharmaceuticals production equipment.	20-24 Feb.	India
 Training Course	RTC on Production and Quality Control of Commercial Cyclotron-based Radiopharmaceuticals	To provide participants with experience of production, quality control, and recent information of commercial cyclotron-based radiopharmaceuticals.	29 May. - 2 Jun.	Virtual
 Training Course	RTC on the Production and Preclinical Evaluation of Emerging Cyclotron-based Radiopharmaceuticals	To provide recent experiences on the production, quality control, and preclinical evaluation of emerging cyclotron-based radiopharmaceuticals.	16-20 Oct.	Australia
 Meeting	Final Project Review Meeting	To review the implementation of the project RAS6097, assess achieved results, and discuss and agree on follow-up cooperative activities to ensure the sustainability of the achieved results of the project.	20-22 Dec.	Virtual

| Project Highlights for 2023

In 2023, two (2) RTCs and one (1) expert mission were conducted. The initial virtual RTC concentrated on the production and quality control of commercial cyclotron-based radiopharmaceuticals, while the subsequent RTC in Australia focused on the production and preclinical evaluation. The participants, comprising various professionals in cancer care, such as radio pharmacists, nuclear medicine physicians, lab technologists, and

cyclotron operators, acquired both theoretical knowledge and practical skills to advance radiopharmaceuticals. The expert mission in India supported the establishment of medical cyclotron facilities and PET radiopharmaceutical production equipment. Following these activities, a final project review meeting was conducted virtually in December to assess the project's implementation and achievements. During the meeting, several comments and suggestions


were raised. Notably, there were discussions regarding the technical support and training needs of specific countries, including Cambodia, Indonesia, and Vietnam. Additionally, there was varying emphasis on specialized training, with Japan and Pakistan expressing differing perspectives. Japan emphasized the importance of expanding the training scope to include medical accelerator specialists and radiopharmaceutical experts, while Pakistan advocated for specific

trainers focused on cyclotron troubleshooting and radiochemistry. Furthermore, there was a consensus on the necessity for ongoing regional training, expert missions, and the development of educational materials to enhance educational standards and the effectiveness of training programs. These discussions underscored the commitment to continuously improve and advance the capabilities within the field.



Final Project Review Meeting, Dec. 2023, Virtual RTC on the Production and Preclinical Evaluation of Emerging Cyclotron-based Radiopharmaceuticals, Oct. 2023, Australia

4. ENVIRONMENT




RAS7035	Enhancing Regional Capability for the Effective Management of Groundwater Resources Using Isotopic Techniques
 Objective	To enhance the management of groundwater pollution using isotopic techniques.

Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project implementation and monitoring structure established and managed.	National project teams identified for each GP.	On target / Behind target/ Completed <ul style="list-style-type: none">Each participating country designated a project team and had an agreed work plan for implementation at the start of the project.In October 2023, the final project review meeting assessed the achieved results and agreed on follow-up cooperative activities to ensure the sustainability of the achieved results of the project.

Output 2 Trained personnel in various aspects of isotopic techniques.	At least 60 number of personnel trained in basic principles of isotopic techniques, in advanced isotopic techniques to investigate source and fate of ground water pollution and in processing and interpretation of isotopic and hydrogeochemical data by the end of 2023.	On target / Behind target/Completed <ul style="list-style-type: none">Two RTCs, one at the basic level and the other at the advanced level, were implemented. Key members of projects teams received training to work with their respective isotope techniques.
Output 3 Isotopic chemical and hydrogeological database established.	Aquifer vulnerability map in some GPs available by 2023 and recommendations made to policymakers.	On target / Behind target/Completed
Output 4 Improved models for groundwater management for socioeconomic benefits.	Groundwater models available in some GPs by the end of 2023.	On target / Behind target/Completed <ul style="list-style-type: none">Preliminary models have been developed for the selected project site, awaiting refinement using hydrological information generated from isotope techniques.

Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Meeting	Final Project Review Meeting	To review the implementation of the project RAS7035, assess achieved results, discuss and agree on follow-up cooperative activities to ensure the sustainability of the achieved results of the project.	23-27 Oct.	China
 Expert	Training on data interpretations for isotope hydrology, and provide advice on project activities	To train on data interpretations for isotope hydrology and advice on project activities.	05-09 Jun.	Japan
 Expert	HBA to develop a regional database of all data obtained from RAS7030 and RAS7035 project	To develop a regional database from RAS7030 and RAS7035 projects.	17 Jul - 15 Dec.	Sri Lanka

| Project Highlights for 2023

The project aimed to enhance the overall capacity of isotope hydrology for groundwater quality management by focusing on laboratory support, manpower, and practical experience in lab work, field investigations, and isotope data interpretation. Its goal was to promote the transfer of technologies among Government Parties in the Asia Pacific region. The final project review meeting took place in Beijing, China in October 2023. It was attended by national project coordinators and representatives of twelve (12) Government Parties who reviewed the project’s progress and its socio-economic impacts on water resource management. Additionally, participants from RAS7030 attended the International Symposium on Isotope Hydrology for Sustainable Water Resources in a Changing World in Vienna, Austria, from 3-7 July 2023. The symposium covered various topics, including isotopic variation in shallow coastal aquifer systems in Sri Lanka. Furthermore, a home-based expert assignment for developing a regional database from both RAS7030 and RAS7035 was conducted in December.

RAS7037

Enhancing Wetland Management and Sustainable Conservation Planning



Objective

To enhance the sustainable development of wetlands and their ecosystem services in the Asia Pacific region.





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| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project efficiently managed	Activities planned and timelines established, project workplan advances on time.	
Output 2 Personnel equipped with isotopic skills, including collection and preparation of samples, use of isotopic techniques, and data analysis and interpretation of results in the context of wetland and fisheries management.	Completion of training and course regarding collection and preparation of samples for isotopic analysis, sample analysis, and data analysis and interpretation. Completion certificate provided following completion of each training course. Completion of country meeting reports.	
Output 3 User manual developed regarding the application of isotopic techniques to wetland management.	User manual developed regarding application of isotopic techniques to wetland management. Developed by the LCCs as modules associated with each training course, this manual will provide step-by-step instructions in sample collection preservation, and preparation, isotopic analysis, and the interpretation of isotopic analysis, and the interpretation of isotopic data in the context of wetland and sustainable fisheries management. The manual will be revised on feedback following expert field missions.	
Output 4 Implications or results for the wise use of wetlands, including conservation and enhanced fishery production, reported to relevant government agencies and other stakeholders.	Completion of reports by at least half of the participating GPs, incorporating results and interpretation of isotopic data by project completion in Q4 2023.	
Output 5 Proficiency test results available and continual improvement in procedures.	Proficiency test report provided by IAEA.	

Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Training Course	RTC on the Interpretation of Isotopic Data for Environmental Management Including the Application of Mixing Models	To provide training in the sampling, data analysis, and interpretation of stable isotope isotopic data results for environmental management including the application of mixing models.	22-23 Jun.	Virtual
 Meeting	Final project review meeting	To review the implementation of the project RAS7037, assess achieved results, discuss and agree on follow-on cooperative activities to ensure the sustainability of the achieved results of the project.	27 Nov. - 1 Dec.	Australia

Project Highlights for 2023

2.2 Ongoing Projects in 2023

The following section discusses the ongoing projects, detailing their activities and achievements. A total of eight (8) projects have successfully continued their journey while making marks on their progress in various sectors including industry, agriculture, human health, environment, and radiation safety.

1 INDUSTRY



RAS1028

Improving the Quality Management Practices in Radiation Processing Facilities for Better Performance and Applications





To improve the level of competitiveness and customer satisfaction of radiation processing facilities of RCA GPs.

Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management team operational.	The number of GPs that have established a project management structure. Baseline-0.	On target / Behind target/Completed <ul style="list-style-type: none">13 targeted GPs have established a project management structure – NPC and team members.
Output 2 Guidelines on conforming to the international standards relevant to the radiation processing facilities established.	Availability of the manual. Baseline- 0.	On target / Behind target/Completed <ul style="list-style-type: none">14 guidelines are delivered to all GPs in 2023

Output 3 Personnel trained in establishing integrated/QM practices in radiation processing facilities.	The number of trained personnel. Baseline: 109 (trained personnel from China is not counted).	On target / Behind target/Completed <ul style="list-style-type: none">140 trained personnel from regional and national training courses.
Output 4 Laboratories capable of carrying out calibrations and measurements required to conform to quality standards.	Number of GPs with laboratories capable to carry out calibrations and measurements required to conform to quality standards. Baselines: 8.	On target / Behind target/Completed <ul style="list-style-type: none">One exercise on dosimetry intercomparison is arranged among high-energy radiation processing facilities (gamma and EB) of the targeted GPs.
Output 5 Documentation required to obtain certification of the QMSs from certification bodies of the participating GPs established.	Number of GPs with required documentation. Baseline: 10.	On target / Behind target/Completed <ul style="list-style-type: none">Most of the targeted countries are working on it.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Meeting	Regional Workshop on Dosimetry Intercomparison, QA/QC and Quality Management Practices	To execute dosimetry intercomparison exercise for radiation processing facilities, and prepare a guideline containing quality management procedures towards improving the quality management practices.	19-23 Jun.	Korea
 Training Course	RTC on Significance and Importance of Dosimetry System and Associated Uncertainty for Radiation Processing Facilities	To provide trained personnel on uncertainty for radiation processing facilities.	13-17 Nov.	Thailand

| Project Highlights for 2023

The regional workshop in Korea took place from June 19 to 23, 2023, with sixteen (16) participants and two (2) experts from Poland and Korea. The workshop included five (5) lectures, two (2) demonstrations, three (3) exercises and two (2) technical visits to KAERI ARTI and KARA.

Similarly, the RTC in Thailand hosted twenty-four (24) participants and one expert from Hungary from 13 to 17 November 2023. The event featured thirteen (13) lectures and six (6) exercises with a technical visit to the gamma and electron beam facilities at TINT. Furthermore, a dosimetry

intercomparison exercise was initiated among high-energy radiation processing facilities as part of a two-year activity spanning 2023-2024. The objective is to ensure dose compliance in dosimetry measurements and compare results among facilities, which include twelve (12) gamma irradiators and seven (7) EB irradiators. To facilitate this exercise, the procurement of a gamma calibration set, EB calorimeter, and alanine dosimeters was shared with the targeted GP to enhance their capacity for conducting the measurements.



Regional Workshop on Dosimetry Intercomparison QA/QC and Quality Management Practices, 19-23, Jun. 2023, Korea

RAS1029

Enhancing Regional Capabilities in Advanced Non-Destructive Testing Techniques for Improved Safety and Inspection Performance in Industries







To establish regional advancement in NDT to fulfil the requirements set by global standards for self-reliance and sustainable NDT system of GPs.

| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management team established and operational.	Management team in place (NPCs for 21 participating GPs appointed and NPTs constituted)	On target / Behind target/ Completed <ul style="list-style-type: none">Project implementation team was established in 2023, during which the NPCs for 21 participating GPs were appointed.
Output 2 Personnel trained and competent in advanced NDT inspection.	No of personnel trained in advanced NDT techniques -Baseline: 60 trained personnel on RT-D during2015-2016 under RAS1020(without certification); 16qualified personnel (out of20 = 80 %) and eligible to RT-D Level 2 certification under RAS1022; 0 qualified and certified Level 3 RT-D personnel (based on past effort analysis). - Baseline :0 trained, qualified and certified Level 2 TOFD personnel (based on past effort analysis).	On target / Behind target/Completed <ul style="list-style-type: none">1 RTC on RT-D has been implemented. 17 personnel have been trained through this RTC with 14 been qualified.1 RTC on PAUT has been implemented. 21 personnel have been trained in PAUT Level 2 (with no qualification exam).

Output 3 Personnel trained and competent in NDT for civil structures.	No of personnel trained and qualified in NDT for civil structures - Baseline: 40 personnel are expected to be trained during 2020-2021 under RAS1022 (without certification); 0 qualified and certified personnel at any level (based on past effort analysis).	On target / Behind target/Completed <ul style="list-style-type: none">No planned activity related to this output for 2023.
Output 4 Capabilities in advanced radiation-based NDT for composite inspection established.	No of personnel trained in radiation-based NDT for composite inspection. -Baseline: 0 trained personnel (based on past effort analysis).	On target / Behind target/Completed <ul style="list-style-type: none">No planned activity related to this output for 2023.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	To train radiation technology in industrial applications.	08-12 May.	Austria
 Training Course	Train-the-Trainers Course on Radiographic Testing - Digital (RT-D) Level 2	To train and qualify participants in ISO 9712 RT-D Level 2.	15 May. - 1 Jun.	Malaysia
 Meeting	Meeting on Harmonization of National Programmes for Development and Application of Advanced NDT Techniques	To discuss and agree on national-level programs and activities for implementing advanced NDT techniques.	21-25 Aug.	Indonesia
 Training Course	RTC on Phased Ultrasonic Testing (PAUT) with ISO 9712 Level 2 certification	To train and qualify participants in ISO 9712 PAUT Level 2.	16 Oct.- 8 Nov.	Korea

| Project Highlights for 2023

RAS1029 commenced this year with three (3) activities successfully implemented as per the project work plan. The first RTC took place in Malaysia, gathering seventeen (17) eligible participants from ten (10) GPs. This training course delivered RT-D Level 2 training and examinations according to ISO 9712 standards. Fourteen (14) candidates successfully passed both the

theoretical and practical examinations, qualifying them to apply for the internationally recognized ISO 9712 RT-D certification pending fulfilment of industrial experience and visual requirements. The second RTC, hosted by Korea, welcomed twenty-one (21) participants from fourteen (14) GPs. This course aimed to train participants and qualify them for PAUT Level 2 certification under ISO 9712

standards. Additionally, a training syllabus for Non-Destructive Testing in civil engineering (NDT-CE) has been developed and submitted to the IAEA for publication. This document will ensure uniformity and harmonization in training requirements, serving as a valuable reference for GPs and aiding them in developing materials for training programs to enhance personnel competency in NDT-CE.



TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering, 8 – 12 May 2023, IAEA Headquarters, Vienna, Austria



Train-the-Trainers Course on Radiographic Testing - Digital (RT-D) Level 2, 15 May – 1 Jun. 2023, Malaysia



2

AGRICULTURE



RAS5091

Assessing and Mitigating Agro-Contaminants to Improve Water Quality and Soil Productivity in Catchments Using Integrated Isotopic Approaches



Objective

To improve agricultural catchment, water, and soil management practices in the Asia-Pacific region by enhancing the capacity of countries to assess and mitigate agricultural contaminants.

| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management team operational with an improved understanding of integrated isotopic techniques to assess agro-contaminants in water and soil in the Asia-Pacific region.	Three project meetings held to establish regional and national project management structures for 20 GPs, preparation of all national work plans, and monitoring and reporting of progress by Q42025.	
Output 2 Personnel with enhanced technical knowledge and skills for the use of integrated isotopic techniques to assess agro-contaminants available.	Completion of 4 regional training courses with 3 RPs and 17 TPs, and 5 expert missions, for the use of integrated isotopic approaches by Q42024.	

Output 3

Mitigation measures for agro-contaminants in catchments developed through national studies using integrated isotopic approaches, and translation of science to management improved.

Completion of an online workshop (1 expert mission or HBA required to run this) and 5 expert missions to develop mitigation measures for agro-contaminants in 5 GPs by Q42024.

Output 4

Data consolidated in regional database of water and soil isotopic signatures to help identify transboundary hotspots/ common issues/practices, and recommendations for enhanced agricultural catchment, water, and soil management practices developed.

Completion of data entry for the regional database, an online workshop (1 expert mission or HBA required to run this) for use of the database, and agreed recommendations for all GPs by Q42025.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
Training Course	RTC on Integrated Isotopic Approaches to Monitor Sources of Agro-Contaminants in the Environment	To train the participants on design and sampling techniques for isotopic and complementary soil and water quality monitoring of agro-contaminants in catchments.	27-28 Jul.	Viet Nam
Training Course	RTC on Advanced Data Analysis for Isotopic Approaches to Assessment and Tracing of Agro-Contaminants in Catchments	To provide knowledge, experience, and skills in data analysis assessment, and tracing of agro-contaminants in catchments	23-27 Oct.	China

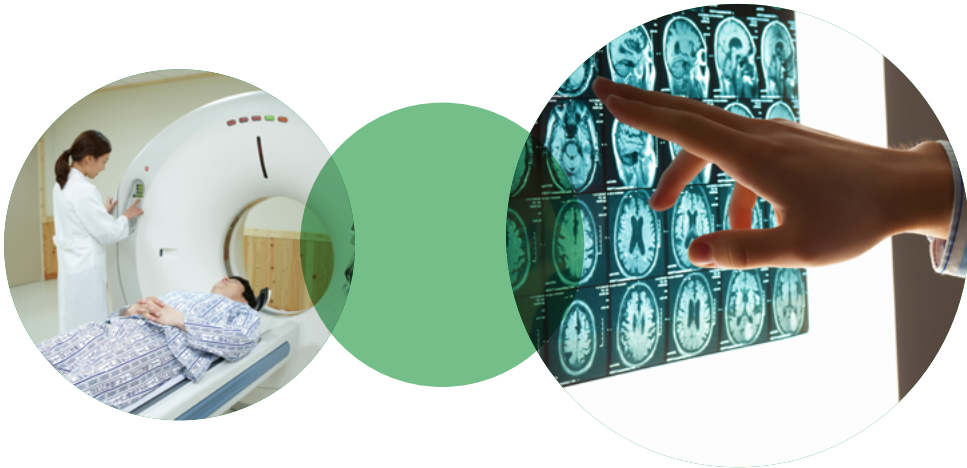
| Project Highlights for 2023

3

HUMAN HEALTH



DETAILS OF THE TECHNICAL PROGRAMME IN 2023



RAS6098

Standardizing Radiotherapy in Palliative Care



Objective

To improve the quality of life for cancer patients in the RCA region.

Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management team operational.	The number of GPs that have established a project management structure. Baseline – 0.	On target / Behind target /Completed <ul style="list-style-type: none">The First Coordination Meeting was held on 22-25 March 2022
Output 2 Radiotherapy professionals trained on comprehensive management of palliative RT	Number of radiotherapy professionals trained on comprehensive management of palliative radiation therapy in the RTCs (2025). Baseline is zero (0).	On target / Behind target/Completed <ul style="list-style-type: none">RTC1: Participants 47 radiotherapy professionals from 15 countriesRTC2: Participants 22 radiotherapy professionals from 10 countries
Output 3 Clinical practice guidelines for palliative RT suited for situations in RCA GPs developed.	Number of practice guidelines for palliative radiotherapy suited for situations in RCA GPs. Baseline is zero (0).	On target / Behind target /Completed <ul style="list-style-type: none">It is currently being prepared and workshops will be held during 2024.

Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Training Course	RTC on Palliative Radio-therapy for Brain Metastases and other Clinical Scenarios	To provide participants with skills and knowledge in palliative radiation therapy for various clinical scenarios.	18-21 Sep.	Pakistan


Project Highlights for 2023

Two RTCs aimed at standardizing palliative radiotherapy were successfully conducted, providing training to numerous participants. Forty-seven (47) professionals from fifteen (15) countries participated in the first RTC, and twenty-two (22) participants from ten (10) countries completed the training. The Midterm Review Meeting, initially scheduled for December 2023, was rescheduled and took place in the first quarter of 2024. Additionally, clinical practice guidelines and workshops are planned to be

held in 2024. Anticipated outcomes of the project include the dissemination of results to individual countries and the broader international community through the National Training Centres (NTCs). Regarding the development of guidelines, the results of the discussion will be consolidated into a comprehensive guidance document. Subsequent workshops will then tailor the document to the unique circumstances of each country.




RTC on Palliative Radiotherapy, Sept. 18-21, 2023, Pakistan

RAS6100	Strengthening Clinical Application of Hypofractionated Radiotherapy
 Objective	To enhance cancer treatment in the RCA region through the application of hydrofractionated radiotherapy.

| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management team operational.	1. Number of GPs that have established a project management structure by 4Q2022 (baseline:0).	On target / Behind target/Completed <ul style="list-style-type: none">18 GPs appointed National Project Teams and prepared National Work Plans
Output 2 Professionals trained in hypofractionated radiotherapy at regional and national level.	2.1 Radiation oncologists, medical physicists, and radiation therapists trained on reginal training courses and functional as national trainers by 4Q2025. 2.2 At least one follow-up national training activity by 4Q2025.	On target / Behind target/Completed <ul style="list-style-type: none">Thirty-five (35) professionals from 15 countries were trained during the 1st RTC in 2022The 2nd RTC in 2023 benefited 57 participants from 7 countries.The 1st EM) in VIE (16 to 19 May, 2023) was held for ROs, MPs, and RTTs in VIE.
Output 3 Safety and quality of hypofractionated radiotherapy improved.	3.1 A package of practical information provided to implement hypofractionated radiotherapy by 4Q2025. 3.2 Implementation of QA/QC programs in counterpart institutions for hypofractionated radiotherapy by 4Q2025. 3.3 Collecting, sharing, and distributing information on hypofractionated radiotherapy by using established IT resources by 4Q2025.	On target / Behind target/Completed <ul style="list-style-type: none">The necessary equipment/items in support of HFRT were provided to the 4 MSs (INS, MAL, MON, VIE) requested through a demand survey (Dec 2022).

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	Expert Mission to Enhance Clinical Application of Hypofractionated Radiotherapy in Vietnam	To provide enhancement in the clinical application of Hypofractionated Radiotherapy in Vietnam.	16-19 May.	Viet Nam
 Training Course	RTC on Mild to Moderate Hypofractionated Radiotherapy (HFRT): Basics to Clinical Application for Curative Treatment of Malignancies	To familiarize participants with basic knowledge and fundamental principles of applying mild to moderate HFRT for curative malignancy treatment.	23-27 Oct.	Pakistan

| Project Highlights for 2023


RAS6100 aimed to strengthen the application of hypofractionated radiotherapy in the RCA region through comprehensive approaches, encompassing both clinical and medical physics aspects of the entire treatment process. The first expert mission took place in May, catering to radiation oncologists, medical physicists, and radiation therapists. During this mission, lectures were delivered on the application of hypofractionated radiation therapy (HFRT) in actual patient scenarios. Topics covered included treatment decisions, target volume determination, dose-fractionation schemes, and beam delivery methods. Experts and specialists engaged in

discussions regarding multicentre clinical trials, educational programs, and external audits related to HFRT. In October, the second regional training course convened, with fifty-seven (57) trainees from seven (7) countries in attendance. This course primarily focused on imparting fundamental knowledge and principles for the clinical application of mild to moderate HFRT in the curative treatment of malignancies. The course comprised fifteen (15) sessions, covering topics such as the medical physics of HFRT, radiobiology, and various cancer sites including head and neck (H&N), breast, lung, rectum, bladder, prostate, and cervix.



Expert Mission, 16-19, May, 2023, Hanoi, Viet Nam







RAS6101	Improving the Quality and Safety of Radiation Medicine through Medical Physicist Education and Training
 Objective	To improve the quality and safety of radiation medicine in the Asia-Pacific region through medical physicist education, training, and certification.

| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management structure established.	Project activities and budget are implemented and utilized as planned. Baseline: Not Mandatory.	On target / Behind target/ Completed <ul style="list-style-type: none">In 2022, the project management structure was established in the regional and national level.
Output 2 Medical physicists trained on quality management and audits.	1-2 physicists per GP to be trained on quality management and audit and at least 10 following national training activities held in GPs by the end of the project. Baseline: No physicists in the region trained on quality management and audit.	On target / Behind target/Completed <ul style="list-style-type: none">More than sixty (60) medical physicists trained on quality management and audits in the virtual RTC in 2022.
Output 3 Increased structured and supervised clinical training programmes for medical physicists implemented in the region (supported through AMPLE).	Clinical training programmes in at least 5 more countries based on local facilities and adopted to local environments to be implemented by the efforts of all participating GPs by the end of project. Baseline: available in about 5 countries.	On target / Behind target/Completed <ul style="list-style-type: none">The AMPLE system was supported for the region clinical training. The residents from Thailand, China, Malaysia, Vietnam, et al use this system for clinical training.
Output 4 Postgraduate academic medical physics programmes linked to clinical training.	Number of postgraduate academic programmes. Baseline: postgraduate academic programmes available in about 10 countries.	On target / Behind target/Completed <ul style="list-style-type: none">The basic framework was briefly discussed in the Krabi, Thailand meeting March 2023. The RTC will be held in 2024. Some new postgraduate academic programmes are started.
Output 5 Establishment of certification and relevant mechanisms for CQMPs supported.	Number of certifications programmes for CQMP, CPD programmes established in the region. Baseline: certification programmes for CQMP available in only several countries. No CPD programmes for medical physicists.	On target / Behind target/Completed <ul style="list-style-type: none">Specific RTC will be held in 2025. The certification for CQMP and CPD program are being prepared and progressed.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	Expert mission to support the assessment of medical physics residents and conduct an orientation program	To support the assessment of medical physics residents and conduct an orientation program.	23-27 Jan.	Australia
 Training Course	RTC on Roles, Responsibilities, Education & Training of Medical Physicists and Certification for Clinically Qualified Medical Physicists.	To provide participants with IAEA guidelines and resources on the roles, responsibilities, education, and certification of medical physicists.	27-31 Mar.	Thailand
 Training Course	RTC on quality management and quality assurance in medical imaging for medical physicists	To provide participants with knowledge, skills, and competencies in quality assurance in nuclear medicine and diagnostic radiology.	22-26 May.	Thailand
 Expert	TC Home-Based Assignment to support AMPLE	To support the AMPLE.	15 Sep - 10 Oct.	Australia

| Project Highlights for 2023

In 2023, two (2) expert-based missions and two (2) training courses were conducted under RAS6101. One of the significant outcomes achieved by the project was the establishment of recommendations from the IAEA to the respective governments, including the Ministry of Health, the Ministry of Education, and the regulatory agency. The recommendations laid the foundation for recognizing medical physicists as health professionals and requiring all radiation

medicine service providers to adopt medical physics staffing levels, ensuring the safe and effective diagnosis and treatment of patients. Furthermore, the recommendations acknowledge the role of the national professional association in managing, approving, and certifying the Clinically Qualified Medical Physicist (CQUMP) program while providing appropriate budgets to support education training.

4

ENVIRONMENT



RAS7040

Improving Water Resources Management Practices by Enhancing the Regional Collaboration in Environmental Isotope Analysis and Applications



Objective




To enhance the regional capability in water quality and water resource monitoring for effective development and management of surface water and groundwater.



| Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project implementation and monitoring structure established and managed.	National project teams identified for each GP	On target / Behind target/ Completed <ul style="list-style-type: none">The output has been completed in the first quarter of 2023.
Output 2 Improved skills in isotopic analysis of dissolved nitrogen species in water (NH ₄ , NO ₃), groundwater dating analysis, and carbon isotope analysis.	Indicators: Number of technical staffs trained and skilled of isotopic analysis (competent in using laser N ₂ O isotope analyser) improved by 2023. Numbers from ILGPs and BLGPs trained on dual stable isotope analysis of NO _x by 2023. Baseline: No research institution from ILGPs and BLGPs is capable of performing dual in stable isotope analysis of NO _x .	On target / Behind target/Completed <ul style="list-style-type: none">27 participants from 15 GPs in the region took part in two RTCs held in Islamabad, Pakistan, 07 – 11 August 2023.6 participants from the region took part in an International TC held in Seibersdorf, Austria.

Output 3 Improved models/ development of scenarios for surface water and groundwater.	“Indicator: Numbers of researchers from ILGPs and BLGPs trained in water modelling. Names of numerical models available in GPs by the end of 2025. Baseline: Water isotopic calibrated and validated hydrological models are not popular in GPs”	On target / Behind target/Completed <ul style="list-style-type: none">25 participants from 15 GPs in the region took part in RTC held in Jakarta, Indonesia, 28 August – 01 September 2023.
Output 4 Isotope, chemical, and hydrogeological database established.	Indicators: Number of databases developed by 2024 – Numbers of GIS maps in some GPs available by 2025. Baseline: Most GPs do not have integrated isotopic, chemical and hydrogeological databases.	On target / Behind target/Completed <ul style="list-style-type: none">National Project Teams of GPs have been collecting the isotopic, chemical and hydrogeological databases for their study areas.Workshop was held in Ha Noi, Vietnam from 20-23 November 2023.
Output 5 Water isotopic monitoring networks integrated for the region.	Indicators: Guideline to set up water isotopic monitoring networks by 2025. Baseline: No regional network of water isotope monitoring has been established in APR.	On target / Behind target/Completed <ul style="list-style-type: none">Most GPs have established their monitoring stations and are ready to integrate into a regional monitoring network.

| Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Expert	Draft IWAVE National Synthesis Report (ISR) of Sri Lanka for preparation of the national hydrological sketch	To make a draft of the IWAVE National Synthesis Report (ISR) of Sri Lanka.	16 Jan - 16 Feb.	Tunisia
 Training Course	RTC on Enhancing Water Resources Management in the Asia and Pacific region through Isotopic Techniques	To familiarize young scientists in the region with isotopic hydrology science.	7-11 Aug.	Pakistan
 Training Course	RTC on Mixing Models of Tracers and Complementary Approaches to Apportion Sources of Contaminants in Ground Water	To train participants in using various models and statistical methods to quantify individual sources of contaminants in groundwater.	28 Aug. - 1 Sep.	Indonesia

 Expert	TC Sponsered Participation in Training Course on Groundwater Vulnerability Modelling	TC sponsored participation in a training course on groundwater vulnerability modelling.	28-31 Aug.	Austria
 Meeting	Workshop on Current Studies on Improving Water Resources Management Using Environment Isotopes Tracers	To exchange experiences among water research experts and regional managers on using environmental isotopes and complementary approaches to enhance water resource management.	20-23 Nov.	Viet Nam

Project Highlights for 2023

The two (2) RTCs hosted by Pakistan and Indonesia played a crucial role in introducing young scientists to isotope hydrology for the first time. The TC focusing on isotope data quality was particularly significant for staff directly engaged in analysing stable isotopes in water, as well as dissolved constituents such as nutrients and agrochemicals. Unfortunately, in 2023, training on dual isotopic analysis for NOx was not conducted due to the limited availability of suitable facilities in the region. Nonetheless, the prospect of utilizing dual isotopic analysis for

NOx, employing reduction with TiCl3 followed by laser spectrometry, generated considerable interest among isotope scientists in the region. Consequently, a training course on this advanced analytical method is planned for 2025. Furthermore, it was strongly recommended that HL GPs and resource countries actively engage and contribute more to the project. Their participation in workshops and their involvement in training young scientists in water resource assessment based on isotopic data are deemed essential.



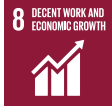
RTC on Mixing Models of Tracers and Complementary Approaches to Apportion Sources of Contaminants in Ground Water, Jakarta, Indonesia, Aug. 2023.



Workshop on Current Studies on Improving Water Resources Management using Environment Isotopes Tracers, Ha Noi, Viet Nam, 20-23 Nov. 2023

5

RADIATION SAFETY



RAS9092

Strengthening the Capacity to Respond to Radiological Emergencies of Category II and III Facilities



Objective


To ensure radiation safety for workers and the public during nuclear or radiological emergencies in the RCA region.

Status of Achievement based on LFM

Output	Indicator and Target	Status of Achievement until 2023
Output 1 Project management structure established.	An agreed project implementation programme.	On target / Behind target /Completed Several project implementations, which were previously agreed upon, are currently behind schedule and are planned to be implemented in the upcoming 2024 programme cycle.
Output 2 Regulators and operators trained in the field of radiation protection strategies for emergencies of category II and III facilities.	The number of regulators and operators trained in the field of radiation protection strategies for emergencies of the Category II and III facilities.	On target / Behind target /Completed • A regional workshop on the development of a National Radiation Emergency Plan (EREP) is rescheduled to be implemented in the first quarter of 2024.

Output 3 A handbook of pilot cases of protection strategies for emergencies of category II and III facilities developed.	A handbook of pilot cases of protection strategies for emergencies of Category II and III facilities.	It was decided to replace the development of a handbook with expert missions and workshops in response to the specific demands of the targeted countries and to avoid redundancy with existing IAEA publications.
Output 4 Expert network established.	Online platform established on the RCARO website.	On target / Behind target/ Completed <ul style="list-style-type: none">A dedicated online platform for expert networks was successfully established on the RCARO website.

Project Activities for 2023

Event	Title	Summary of Purpose	Dates /Duration	Host Country
 Meeting	Mid-term Review Meeting	To review the implementation progress of the project RAS9092, discuss and update the work plan for 2023-2024.	13-17 Feb.	Malaysia

Project Highlights for 2023

In February 2023, a mid-term review meeting took place in Malaysia from the 13th the 17th to assess the progress of implementation and outline the work plan for 2023-2024. The Meeting, attended by the LCC and NPCs from fourteen (14) Government Parties, along with two representatives from the IAEA, consisted of two sections. Section 1 focused on reviewing the project’s implementation, followed by Section 2, which evaluated its achievements. Specifically, the Meeting recommends that participating countries submit their national progress reports in a complete and timely manner to comprehensively document project progress while revising the project work plan. Regarding expert missions, it was agreed that countries must be prepared with a draft of the emergency plan and/or protection strategy before the planned Regional Workshop

in 2024. The plan for RAS9092 was finalized, including both a regional and virtual workshop in 2024 and the Final Review Meeting in November 2024 in Pattaya, Thailand. Overall, the Meeting successfully achieved its objective, leading to the revision of the project work plan to align with project progress and current national needs, incorporating expert missions and regional workshops.



Annexes

Annex 1

List of RCA On-going Projects in 2023

Annex 2

RCA Events Implemented in 2023

Annex 3

Allocations of Extrabudgetary Contributions to RCA Projects

Annex 4

Report of In-kind Contributions in 2023

Annex 5

Planned Regional Events under RCA Projects in 2024

Annex 6

List of National RCA Representatives

Annex 7

Main Decisions and Outcomes of the Policy Level Meetings in 2023

Annex 8

RCARO Actions in 2023

Annex 9

Report on TCDC Activities in 2023

List of RCA On-going Projects in 2023

No.	Project Number	Project Title	Implementati on Period	LC/LCC	TO
1	RAS0086	Enhancing the Management and Implementation of Activities under the Framework (RCA)	2020-2023	ROK Ms Lee Doyeon Nuclear and Fusion Energy Cooperation Division Ministry of Science and ICT Email: leedy@korea.kr	Mr Gashaw Gebeyehu Wolde
3	RAS1028	Improving the Quality Management Practices in Radiation Processing Facilities for Better Performance and Applications (RCA)	2022-2025	MAL Ms Ruzalina Baharin Malaysian Nuclear Agency Email: ruzalina@nuclearmalaysia.gov.my	Mr Bum Soo Han
3	RAS1029	Enhancing Regional Capabilities in Advanced Non-Destructive Testing Techniques for Improved Safety and Inspection Performance in Industries (RCA)	2023-2026	MAL Mr Ilham Mukriz Zainal Abidin Malaysian Nuclear Agency Email: mukriz@nuclearmalaysia.gov.my	Mr Gerardo Antonio Antonio Maghella Seminario
4	RAS5087	Promoting Food Irradiation by Electron Beam and X Ray Technology to Enhance Food Safety, Security and Trade (RCA)	2020-2023	VIE Mr Tran Minh Quynh Hanoi Irradiation Center, Vietnam Atomic Energy Institute Email: tmqthuquynh@gmail.com	Mr Carl Michael Blackburn
5	RAS5088	Enhancing Crop Productivity and Quality through Mutation by Speed Breeding (RCA)	2021-2025	PRC Ms Huijun GUO Institute of Crop Science, Chinese Academy of Agricultural Science (CAAS) Email: guohuijun@caas.cn	Ms Fatma Sarsu
6	RAS5091	Assessing and Mitigating Agro-Contaminants to Improve Water Quality and Soil Productivity in Catchments Using Integrated Isotopic Approaches (RCA)	2020-2025	AUL Mr Timothy Ralph Macquarie University Department of Environmental Sciences Email: tim.ralph@mq.edu.au	Mr Joseph Adu-Gyamfi
7	RAS6096	Empowering Regional Collaboration among Radiotherapy Professionals through Online Clinical Networks (RCA)	2020-2023	NZE Mr Iain Gordon Ward Canterbury Regional Cancer and Blood Service, Christchurch Hospital Email: Iain.Ward@cdhb.health.nz	Mr Gregorius Ben Prajogi

No.	Project Number	Project Title	Implementati on Period	LC/LCC	TO
8	RAS6097	Enhancing Capacity and Capability for the Production of Cyclotron-Based Radiopharmaceuticals (RCA)	2020-2023	ROK Mr Byung li Kim Korea Institute of Radiological and Medical Sciences (KIRAMS) Email: kimbi@kirams.re.kr	Mr Amirreza Jalilian
9	RAS6098	Standardizing Radiotherapy in Palliative Care (RCA)	2022-2025	JPN Mr Masaru Wakatsuki National Institute for Quantum and Radiological Science and Technology, QST Hospital Email: wakatsuki.masaru@qst.go.jp	Mr Kamal Akbarov Mr Daniel Berger
10	RAS6100	Strengthening Clinical Application of Hypofractionated Radiotherapy (RCA)	2022-2025	ROK Mr Wonil Jang Korea Institute of Radiological and Medical Sciences (KIRAMS) Email: zzang11@kirams.re.kr	Mr Kamal Akbarov Mr Daniel Berger
11	RAS6101	Improving the Quality and Safety of Radiation Medicine through Medical Physicist Education and Training (RCA)	2022-2025	PRC Mr YANG Ruijie Department of Radiation Oncology Peking University Third Hospital Email: ruijiang@yahoo.com	Mr Pavel Kazantsev Ms Olivera Ciraj Bjelac
12	RAS7035	Enhancing Regional Capability for the Effective Management of Ground Water Resources Using Isotopic Techniques (RCA)	2020-2023	PRC Zhonghe PANG Institute of Geology and Geophysics, Chinese Academy of Science Email: Z.Pang@iaea.org	Mr Umayya Doss Sarvana Kumar
13	RAS7037	Enhancing Wetland Management and Sustainable Conservation Planning (RCA)	2020-2023	AUL Prof. Neil Saintilan Macquarie University Email: neil.saintilan@mq.edu.au	Ms Inmaculada Tolosa Bertral
14	RAS7040	Improving Water Resources Management Practices by Enhancing the Regional Collaboration in Environmental Isotope Analysis and Applications (RCA)	2022-2025	VIE Dr Trinh Anh Duc Nuclear Training Center Vietnam Atomic Energy Institute Email: rinhanhduc@vinatom.gov.vn	Mr Umayya Doss Sarvana Kumar
15	RAS9092	Strengthening the Capacity to Respond to Radiological Emergencies of Category II and III Facilities (RCA)	2020-2023	ROK Mr Mincheol Park Programme Division RCA Regional Office Email: mcpark@rcaro.org	Ms Muzna Assi

RCA EVENTS IMPLEMENTED IN 2023

Regional Training Course				Training Participants									
Project	Event title	Dates	HOST	AUL	BDG	CPR	FIJ	IND	INS	JPN	KAM	LAO	MAL
RAS5091	Regional Training Course on Integrated Isotopic Approaches to Monitor Sources of Agro Contaminants in the Environment	27-28 July 2023	Da Lat, Viet Nam	0	2	2	1	1	2	0	0	0	2
RAS5091	Regional Training Course on Advanced Data Analysis of Isotopic Approaches to Assessment and Tracing of Agro-Contaminants in Catchments	23-27 October 2023	Beijing, China	0	1	5	1	0	1	0	0	1	2
RAS5088	Regional Training Course on Mutation by Speed Breeding (MbyS) for Abiotic Stress Tolerance	07-18 August 2023	IAEA (Virtually)	0	1	2	1	0	5	0	0	1	2
RAS6098	Regional Training Course on Palliative Radiotherapy for Brain Metastases and other Clinical Scenarios	18-21 September 2023	Islamabad, Pakistan	0	1	0	0	0	2	0	2	0	1
RAS6100	Regional Training Course on Mild to Moderate Hypofractionated Radiotherapy (HFRT): Basics to Clinical Application for Curative Treatment of Malignancies	23-27 October 2023	Lahore, Pakistan	0	0	0	0	0	1	0	1	0	2
RAS6101	RTC on Roles Responsibility, Education & Training of Medical Physicist and Certification for Clinically Qualified Medical Physicist.	27-31 March 2023	Krabi, Thailand 2023	1	2	1	0	2	2	0	1	1	2
RAS6101	RTC on quality management and quality assurance A in medical imaging for medical physicists	22-26 May 2023	Bangkok, Thailand	0	2	1	0	0	2	0	2	0	3
RAS7040	Regional Training Course on Enhancing Water Resources Management Through Isotopic Techniques	7-11 August 2023	Islamabad, Pakistan	0	0	0	0	0	2	0	0	0	2

Annex 2a Participation by Government Party in RCA Regional Training Courses Implemented in 2023

Training Participants												Lecturers and Experts			
MON	MYA	NEP	NZE	PAK	PHI	PLW	ROK	SIN	SRL	THA	VIE	Regional	Non-Reg	IAEA	Total
1	1	2	0	1	1	0	1	0	0	1	5	2	0	1	26
3	1	0	0	1	1	0	0	0	1	0	1	0	1	0	20
2	2	0	0	2	2	0	0	0	1	2	2	0	2	0	27
3	2	0	0	6	2	0	0	0	0	0	2	1	0	0	22
0	2	1	0	10	0	0	0	0	0	1	1	0	1	0	20
1	2	1	0	2	1	0	2	1	1	6	2	3	0	0	34
1	2	1	0	0	0	0	0	2	0	12	2	2	0	0	32
3	1	1	0	7	2	0	0	0	1	3	1	0	0	0	23

RCA EVENTS IMPLEMENTED IN 2023

Regional Training Course				Training Participants									
Project	Event title	Dates	HOST	AUL	BDG	CPR	FIJ	IND	INS	JPN	KAM	LAO	MAL
RAS7040	Regional Training Course on Mixing Models of Tracers and Complementary Approaches to Apportion Sources of Contaminants in Ground Water	28 Aug-01 Sep 2023	Jakarta, Indonesia	0	1	0	2	0	2	0	0	1	2
RAS7037	Regional Training Course on The Interpretation of Isotopic Data for Environmental Management Including The Application of Mixing Models.	22-23 June 2023	IAEA Virtual	0	3	0	0	0	3	0	0	0	6
RAS6097	Regional Training Course on Production and Preclinical Evaluation of Emerging Cyclotron-based Radiopharmaceuticals	16-20 October 2023	Sydney, Australia	0	2	2	0	1	0	1	0	2	2
RAS6097	Virtual Regional Training Course on Production and Quality Control of Commercial Cyclotron-based Radiopharmaceuticals	29 May-02 June 2023	IAEA Virtual	1	3	2	0	1	7	0	0	0	5
RAS1028	RTC on Significance and Importance of Dosimetry System and Associated Uncertainty for Radiation Processing Facilities	13-17 November 2023	Bangkok, Thailand	0	2	1	0	1	2	0	0	1	2
RAS1029	Train the Trainers Course on Radiographic Testing – Digital (RT-D) Level 2	15 May to 01 June 2023	Kajang, Malaysia	0	2	0	0	0	2	0	0	0	0
RAS1029	Regional Training Course on Phased Ultrasonic Testing (PAUT) with ISO 9712 Level 2 Certification	16 Oct-08 Nov 2023	Daejeon, Korea	0	1	1	0	0	2	0	1	2	2
GRAND TOTAL				2	23	17	5	6	35	1	7	9	35

Annex 2a Participation by Government Party in RCA Regional Training Courses Implemented in 2023

Training Participants												Lecturers and Experts			
MON	MYA	NEP	NZE	PAK	PHI	PLW	ROK	SIN	SRL	THA	VIE	Regional	Non-Reg	IAEA	Total
0	1	0	0	2	2	0	0	0	0	2	1	2	0	1	19
2	0	0	0	2	3	0	0	0	6	3	2	1	0	0	31
2	0	2	0	1	3	0	0	2	1	2	2	0	0	1	26
5	3	3	0	0	0	0	5	5	3	5	5	0	0	1	54
1	2	0	0	1	2	0	1	0	0	5	2	0	1	0	24
0	0	2	0	1	2	0	1	1	2	2	2	0	2	0	17
1	0	2	0	1	1	0	0	1	2	2	2	0	0	0	21
25	19	15	0	37	22	0	10	12	18	46	32	11	5	4	396

RCA EVENTS IMPLEMENTED IN 2023

Regional Training Course				Training Participants									
Project	Event title	Dates	HOST	AUL	BDG	CPR	FIJ	IND	INS	JPN	KAM	LAO	MAL
RAS5087	Final Project Review Meeting	30 Oct to 03 Nov 2023	Hanoi, Viet Nam	1	1	0	0	1	2	1	0	1	1
RAS5088	Mid-Term Project Review Meeting	10-20 October 2023	Beijing, China	1	1	1	1	1	1	0	0	1	1
RAS6096	Final Project Review Meeting	27 Nov to 01 Dec 2023	Denpasar, Indonesia	3	2	1	0	1	2	1	2	0	3
RAS7035	Final Project Review Meeting	23-27 October 2023	Beijing, China	1	1	2	0	0	1	0	0	1	1
RAS7040	Workshop on Current Studies on Improving Water Resources Management Using Environment Isotopes Tracers	20-23 November 2023	Hanoi, Viet Nam	0	2	2	1	1	2	0	0	1	2
RAS6097	Final Project Review Meeting	20-22 December 2023	IAEA Virtual	0	2	3	0	1	1	1	1	0	1
RAS1028	Regional Workshop on Dosimetry Intercomparison, QA/QC and Quality Management Practices.	19-23 June 2023	Jeongeup, Korea	0	2	0	0	0	1	0	0	0	2
RAS1029	Meeting on Harmonization of National Programs for Development and Application of Advanced NDT Techniques	21-25 August 2023	Jakarta, Indonesia	0	1	1	1	0	1	0	0	1	1
RAS9092	Mid-term Review Meeting	13-17 February 2023	Kuala Lumpur, MAL	0	1	0	0	0	1	0	1	1	2
RAS0086	RCA Project Design Meeting	6-10 February 2023	Vienna, Austria	1	0	2	0	1	2	3	0	0	1
RAS0086	45 th Regional Meeting of National RCA Representatives	8-12 May 2023	Sydney, Australia	2	1	2	2	1	1	3	1	1	1
RAS0086	RCA Chair and SAC Meeting	21 September 2023	Vienna, Austria	1	0	2	0	0	1	1	0	0	1
RAS0086	RCA PAC Meeting	18-20 September 2023	Vienna, Austria	2	0	1	0	0	1	1	0	0	1
RAS0086	Meeting of the WG on MTSC	14-18 August 2023	IAEA (Virtually)	0	2	0	0	0	0	0	0	0	0
RAS0086	52 nd RCA General Conference Meeting	22 September 2023	Vienna, Austria	5	2	2	1	1	2	5	0	1	3

Annex 2b Participation by Government Party in RCA Regional Meetings in 2023

Training Participants												Lecturers and Experts			
MON	MYA	NEP	NZE	PAK	PHI	PLW	ROK	SIN	SRL	THA	VIE	Regional	Non-Reg	IAEA	Total
1	1	1	2	1	1	0	1	0	1	1	1	0	0	2	21
1	1	1	1	1	1	0	1	0	1	1	1	0	1	1	18
2	2	1	4	2	2	0	1	0	2	1	1	0	0	2	35
1	1	1	0	1	0	0	0	0	1	1	1	0	0	1	15
1	2	1	0	2	2	0	0	0	2	2	4	0	1	0	28
0	2	0	0	1	1	0	2	0	0	1	1	0	0	0	18
0	1	0	0	0	2	0	1	0	1	1	2	0	1	0	14
1	1	1	1	1	1	0	1	1	1	1	1	0	0	1	18
1	1	1	0	1	1	0	1	0	1	1	1	0	0	2	17
0	0	0	0	2	1	0	0	0	0	0	1	0	0	5	19
1	1	2	1	1	1	0	0	0	2	1	1	0	0	3	29
0	0	0	0	0	1	0	1	0	1	0	0	0	0	4	13
0	0	0	0	0	1	0	1	0	1	0	0	0	0	4	13
0	0	0	1	0	1	0	2	0	0	0	0	0	0	4	10
1	2	2	1	1	4	1	10	1	2	4	2	0	0	10	63

RCA EVENTS IMPLEMENTED IN 2021

Annex 2c Expert Missions Implemented in 2023

Project	Task title	Duration (Expert-Days)	Nationality
RAS5087	Expert Mission on Validation and verification of dosimetry system at 3 MeV electron beam (EB) machine for sanitary (1-10 kGy) and phytosanitary (← 1 kGy) purposes	4	France
RAS6100	Expert Mission to enhance Clinical Application of Hypofractionated Radiotherapy in Vietnam	4	Korea
RAS6100	Expert Mission to enhance Clinical Application of Hypofractionated Radiotherapy in Vietnam	4	Korea
RAS6101	Expert mission to support assessment of medical physics residents and conduct an orientation program	5	Australia
RAS6101	Expert mission to support assessment of medical physics residents and conduct an orientation program	5	Australia
RAS7035	Training on data interpretations for isotope hydrology, and provide an advice to project activities.	5	Japan
RAS6097	Expert Mission on setting up of a Medical Cyclotron and PET Radiopharmaceuticals production equipment	5	India
RAS1029	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	5	Malaysia
RAS1029	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	5	Singapore
RAS1029	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	5	Malaysia
RAS1029	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	5	New Zealand
RAS1029	TC Sponsored Participation on 2nd Consultancy Meeting on NDT Applications in Civil Engineering	5	Philippines
Grand TOTAL of Days and Experts		57 days	

Annex 2d Expert Missions Implemented in 2023

Project	Task title	Duration (Expert-Days)	Nationality
RAS5087	HBA on on electron beam and X ray irradiation and dosimetry system at 3 MeV electron beam (EB) machine for sanitary (1-10 kGy) and phytosanitary (← 1 kGy) purposes.	5	France
RAS6101	TC Home Based Assignment to support AMPLE	10	Australia
RAS6101	TC Home Based Assignment to support AMPLE	105	Australia
RAS6101	Home Based Assignment to support migration of AMPLE	10	Australia
RAS7035	Home Based Assignment (HBA) to develop regional database of all data obtained from RAS7030 and RAS7035 projects	15	Sri Lanka
RAS7040	Draft IWAVE National Synthesis Report (ISR) of Sri Lanka for preparation of the national hydrological sketch.	15	Tunisia
Grand TOTAL of Days and Experts		65 days	

RCA EVENTS IMPLEMENTED IN 2023

Regional Training Course				Training Participants									
Project	Event title	Dates	HOST	AUL	BDG	CPR	FIJ	IND	INS	JPN	KAM	LAO	MAL
RAS5087	TC Sponsored Participation on International Food Irradiation Symposium 26- 28 September in Dallas under RAS5087	26-28 September 2023	Dallas, USA	1	1	0	0	0	0	0	0	0	1
RAS7040	TC Sponsored Participation on Training Course on Groundwater Vulnerability Modelling	28-31 August 2023	Vienna, Austria	0	0	0	0	0	0	0	0	0	0
RAS7040	TC Sponsored Participation on Training Course on Nitrate Isotope Analysis by Laser Spectroscopy and Isotope Ratio Mass Spectroscopy	13-17 November 2023	Vienna, Austria	0	0	1	0	0	1	0	0	0	0
RAS0086	TC Sponsored Participation on RCA Chairs Meeting to discuss and propose action plans for deployment and excecution of the RCA Declaration Vienna 2022	27 Feb to 02 March 2023	Da Nang, Viet Nam	0	0	1	0	0	0	0	0	0	0

Annex 2e Expert Missions Implemented in 2023

Training Participants												Lecturers and Experts			
MON	MYA	NEP	NZE	PAK	PHI	PLW	ROK	SIN	SRL	THA	VIE	Regional	Non-Reg	IAEA	Total
0	1	0	0	0	0	0	0	0	1	1	1	0	0	1	9
0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
0	0	0	1	0	1	0	3	0	0	0	0	0	0	0	4

ALLOCATIONS OF EXTRABUDGETARY CONTRIBUTIONS
TOWARDS RCA PROJECTS

(2015 - 2023)

Country	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total
Australia	131,469		6,600					525,357	90,461	753,888
China		106,106	57,518	57,518	52,085	92,480			525,357	324,054
Indonesia	7,064									7,064
Japan				171,150						171,150
Korea	93,171			307,770	219,478	53,760	119,408			1,156,917
Malaysia	17,820		9,346	10,000	10,000	10,000	10,000	10,000		77,166
Norway							353,666			353,666
Philippines			4,685	4,185	4,435	4,550	4,120	9,465		31,440
Thailand			5,000							5,000
United States of America						84,400				84,400
Total	€249,524	€390,326	€83,149	€588,080	€285,998	€245,190	€487,194	€544,822	€90,461	€2,964,745

REPORT OF IN-KIND CONTRIBUTIONS IN 2023

According to the endorsement of the RCA NRs at the 48th RCA GCM on reporting of the in-kind contributions, calculation of the in-kind contributions was made in two stages; the first stage on the RCARO’s calculation of the regional contributions based on the Agency’s record and the second stage for the NRs to report national contributions at the NRMs, using the provided template. The following levels of € values were used as approved by the 48th RCA GCM.

- GP Hosting of RTCs - €3,200/working day;
- GP Hosting of Regional Meetings/Workshops - €1,600/working day;
- GP Provision of Experts/Lecturers for Regional assignments - €160/person/working day;
- GP Provision of Participants for Regional Meetings - €160/person/working day;
- GP Implementation of National Training related to RTCs - €300/working day/event;
- GP Provision of Any Other Cost-free Services

(Unit: euro)

Project	AUL	BDG	CPR	FIJ	IND	INS	JPN	KAM	MAL	LAO	MON	MYA	NEP	NZE	PAK	PHI	PLW	ROK	SIN	SRL	THA	VIE
RAS0086	115,720	2,720	10,720	1,760	1,760	3,200	6,080	800	2,560	960	960	1,120	1,920	1,760	2,560	3,520	160	30,240	160	2,400	1,440	53,280
RAS1028	-	3,200	800	-	800	2,400	-	-	2,400	2,400	800	2,400	-	-	800	3,200	-	-1,600	-	800	6,600	5,300
RAS1029	-	10,400	4,640	800	-	16,740	-	3,840	8,480	8,480	4,640	800	14,240	800	13,880	10,400	-	3,680	14,420	14,240	24,740	14,240
RAS5087	800	800	-	-	800	1,600	800	-	800	800	800	800	800	1,600	800	800	-	800	-	800	2,300	2,900
RAS5088	1,760	3,680	5,600	3,680	1,760	17,660	-	-	3,680	3,680	5,900	5,600	1,760	-	5,600	5,600	-	1,760	-	3,680	5,600	5,600
RAS5091	-	1,440	4,640	1,120	320	4,740	-	-	800	800	2,720	1,120	640	-	1,120	1,120	-	320	-	800	320	2,400
RAS6096	2,400	1,600	800	-	800	9,820	800	1,600	2,400	-	1,600	1,600	800	3,200	1,600	1,600	-	800	-	1,600	800	800
RAS6097	5,600	4,960	4,640	-	2,080	6,080	1,280	480	2,080	1,600	5,600	3,360	4,000	-	1,280	2,880	-	10,989	5,600	3,200	6,080	6,080
RAS6098	-	640	-	-	-	1,280	-	1,280	640	-	1,920	1,280	-	-	6,440	1,280	-	-	-	-	-	1,280
RAS6100	-	-	-	-	-	800	-	800	-	-	-	1,600	800	-	8,000	-	-	-	-	-	2,300	1,500
RAS6101	800	3,200	1,600	-	1,600	3,200	-	2,400	800	800	1,600	3,200	1,600	-	1,600	800	-	1,600	2,400	800	14,400	4,700
RAS7035	800	800	1,600	-	-	2,600	-	-	800	800	800	800	800	-	5,300	-	-	-	-	800	800	800
RAS7037	-	960	-	-	-	960	-	-	-	-	640	-	-	-	640	690	-	-	-	1,920	960	640
RAS7040	-	2,080	1,280	2,240	640	4,480	-	-	4,480	1,440	3,040	2,880	1,440	-	8,480	4,480	-	-	-	2,080	5,280	-
RAS9092	-	800	-	-	-	800	-	800	800	800	800	2,400	800	-	800	800	-	800	-	800	2,300	1,500
TOTAL (€)	127,880	37,280	36,320	9,600	10,560	76,360	8,960	12,000	30,720	20,960	31,820	28,960	7,360	58,900	37,440	160	52,589	22,580	22,580	33,920	73,920	101,520
Grand Total:849,409																						

Planned Regional Events under RCA Projects in 2024

Project	MT/WS: Meeting/ Workshops RTC: Regional Training Course	Title of Event	Proposed Country (City, Country)	Date (Specific Day & Month)	Objective and Participation
Q1/2024					
RAS1028	MT	Mid-Term Review Meeting	Suzhou, China	4-8 Mar. 2024	<p>Objective: To assess the regional project and national activities throughout year 2022-2023, as well as further program to achieve project objective and outputs.</p> <p>Target participants: NPCs or A/NPCs or senior members of national project teams.</p> <p>Estimated number: 20</p>
RAS6101	RTC	RTC on academic programmes	Beijing, China	11-15 Mar. 2024	<p>Objective: To provide participants with guidelines, guidelines, knowledge, and skills in establishing and improving the postgraduate academic programmes of medical physics</p> <p>Target participants: Experts in postgraduate academic programmes of medical physics</p> <p>Estimated number: 21</p>
RAS7037	Meeting	Final project review meeting	Virtual	11-15 Mar. 2024	<p>Objective: To review the implementation of the project RAS7037, assess achieved results, discuss and agree on follow-on cooperative activities to ensure the sustainability of the achieved results of the project.</p> <p>Target participants: National Project Coordinator (NPCs) or A/NPCs or senior members of national project teams.</p> <p>Estimated number: 22</p>
RAS6098	MT	Mid-term review meeting	Chiba, Japan	12-15 Mar. 2024	<p>Objective: To review the implementation progress of the project RAS6098, discuss and update the workplan for 2024-2025.</p> <p>Target participants: NPCs or A/NPCs or senior members of national project teams.</p> <p>Estimated number: 22-25</p>
RAS5091	WS	Workshop on soil-water management practices to reduce agro- contaminants and improve water quality	Bahdurgarh (New Delhi), India	18-22 Mar. 2024	<p>Objective: To develop sustainable management practices to improve soil and water quality</p> <p>Target participants: Members of national project team, members of the Mekong River Commission and international experts on water quality</p> <p>Estimated number: 25.</p>
RAS9092	WS	Workshop on development of a national radiation emergency plan (NREP) (including hazard assessment)	Pattaya Thailand	25-29 Mar. 2024	<p>Objective: To guide participants to develop a national radiation emergency plan (NREP) including hazard assessment.</p> <p>Target participants: Key persons involved in the development of NREP of their country.</p> <p>Estimated number: 25</p>

Project	MT/WS: Meeting/ Workshops RTC: Regional Training Course	Title of Event	Proposed Country (City, Country)	Date (Specific Day & Month)	Objective and Participation
Q2/2024					
RAS5088	MT	Consultancy meeting on development of MbyS protocols, consultation of MbyS implementation and linkage of mutant lines with AOAPM	Hanoi, Viet Nam	15-19 Apr. 2024	<p>Objective: To work on protocols of mutation by speed breeding and provide to participating GPs.</p> <p>Target participants: NPC or A/NPC or senior member of national project team.</p> <p>Estimated number: 2</p>
RAS6098	MT	Mid-term review meeting	Chiba, Japan	22-26 Apr. 2024	<p>Objective: To review the implementation progress of the project RAS6098, discuss and update the workplan for 2024-2025.</p> <p>Target participants: NPCs or A/NPCs or senior members of national project teams.</p> <p>Estimated number: 22-25</p>
RAS0092	MT	46th Regional Meeting of National RCA Representatives (including RCA Chairs Meeting and RCARO SAC Meeting)	Beijing, China	13-17 May. 2024	<p>Objective: To discuss and agree on strategy, policy and management issues for deployment and execution of the RCA Declaration, decisions and recommendations adopted at the 52th RCA GCM on 22 September 2023, review and approval of the RCA Medium Term Strategy 2024-2029, the implementation of the RCA programme in 2023, the development of RCA programme for 2026-2027, the operation of the RCA Regional Office, as well other relevant issues.</p> <p>Target participants: National Representatives and senior officials from RCA State Parties, the RCARO, the IAEA, and relevant experts.</p> <p>Estimated number: 55-60</p>
RAS5091	MT	Mid-term Review Meeting	Christchurch, New Zealand	24-27 Jun. 2024	<p>Objective: To review the implementation progress of the project RAS5091, discuss and update the workplan for 2024-2025.</p> <p>Target participants: NPC or A/NPC or senior member of national project team.</p> <p>Estimated number: 20</p>
RAS5088	MT	Mutation breeding network meeting	IAEA	June 2024	<p>Objective: To exchange progresses on mutation by speed breeding in Asia Pacific Region as well as African and other continents.</p> <p>Target participants: NPC or A/NPC or senior member of national project team; senior scientists from African and other continents.</p> <p>Estimated number: 30</p>

Planned Regional Events under RCA Projects in 2024

Project	MT/WS: Meeting/ Workshops RTC: Regional Training Course	Title of Event	Proposed Country (City, Country)	Date (Specific Day & Month)	Objective and Participation
RAS1028	WS	Gamma Dosimetry for QA/QC Applications	Quezon City, Philippines	24-28 Jun. 2024	Objective: To provide details activity on gamma dosimetry establishment of calibration curve for QAQC applications. Target participants: Members of national project team of RAS1028 Estimated number: 30
RAS6101	MT	Mid-term Review Meeting	Tokyo, Japan	June 2024	Objective: To review the implementation progress of the project RAS6101, discuss and update the workplan for 2024-2025. Target participants: NPC or A/NPC or senior member of national project team. Estimated number: 21
RAS5091	RTC	RTC on multistage mixing models to decouple fate of water and solutes. or RTC on assessing pesticide pollution and soil-water- plant quality in agro- environment	Jarkarta, Indonesia	12-16 Aug. 2024	Objective: To provide participants with guidelines, on the use of models of interpret isotopic water quality data OR Objective: To provide participants with guidelines to assess pesticide pollution on soil-water-plant quality in agro-environment Target participants: Experts in the use of stable isotopes to trace pesticides in soil-plant system. Estimated number: 15
RAS7040	MT	Mid-term project review meeting	India, BARC	June	Objective: To review the implementation progress of the Project RAS7040, discuss and update the workplan for 2024-2025. Target participants: NPC or A/NPC or senior member of national project team. Estimated number: 20
Q3/2024					
RAS1029	MT	Expert group meeting to develop question banks on RT-D	Dhaka, Bangladesh	19-23 Aug. 2024	Objective: To develop sets of questions to be used in RT-D training and qualification exams Target participants: Experts and trainers in RT-D technique Estimated number: 8

Project	MT/WS: Meeting/ Workshops RTC: Regional Training Course	Title of Event	Proposed Country (City, Country)	Date (Specific Day & Month)	Objective and Participation
RAS1029	WS	Workshop on NDT techniques for quality control in civil engineering	Singapore	16-20 Sep. 2024	Objective: To provide participants with wide ranging technical deliberations on NDT techniques in civil engineering practices, guidelines and standards. Target participants: Member of national project team Estimated number: 21
RAS0092	MT	53rd RCA General Conference Meeting (including RCA Chairs Meeting and RCARO SAC Meeting)	Vienna Austria	19-20 Sep. 2024	Objective: To discuss and agree on strategy, policy and management issues under the RCA, the implementation of the RCA programme, the operation of the RCA Regional Office, as well other relevant issues. Target participants: National Representatives and senior officials from RCA State Parties, the RCARO, the IAEA, and relevant experts. Estimated number: 55-60
RAS7040	RTC	RTC on dating groundwater using noble gases and ¹⁴ C-techniques	Bangkok, Thailand	September 2024	Objective: To instruct isotopes hydro-geologists and isotopes scientists the methodology of noble gases and ¹⁴ C-techniques in dating old groundwater Target participants: NPTM (National Project Team Member) Estimated number: 20
Q4/2024					
RAS1029	MT	Mid-Term Review Meeting for NPCs to review the project progress and discussion on gaps and strategy for successful implementation	Bangkok, Thailand	7-11 Oct. 2024	Objective: To review the implementation progress of the project RAS1029, discuss and update the workplan for 2025-2026. Target participants: NPC or A/NPC or senior member of national project team. Estimated number: 21
RAS1028	WS	Electron Beam Dosimetry for QA/QC Applications	Hanoi, Vietnam	7-10 October 2024	Objective: To provide details activity on electron beam dosimetry establishment of calibration curve for QA/QC Target participants: Members of national project team of RAS1028 Estimated number: 30

ANNEX 5

Planned Regional Events under RCA Projects in 2024

Project	MT/WS: Meeting/ Workshops RTC: Regional Training Course	Title of Event	Proposed Country (City, Country)	Date (Specific Day & Month)	Objective and Participation
RAS6101	RTC	RTC on clinical programmes	Hanoi, Vietnam	October 2024	<p>Objective: To provide participants with the skills and confidence to implement clinical training in medical physics. There would be less focus on final assessment and more focus on planning clinical training at a national/hospital level, use of AMPLE etc.</p> <p>Target participants: The participants would include residents, as well as national program coordinators and clinical supervisors.</p> <p>Estimated number: 21</p>
RAS5088	RTC	RTC on Genomics; Genotyping; Phenotyping; Genetics, handling of mutants to speed up.	Faisalabad, Pakistan	28 Oct to 01 Nov. 2024	<p>Objective: To provide participants with guidelines, knowledges and skills on Genomics and/or Genotyping and/or Phenotyping and/or Genetics, which are related with mutation by speed breeding.</p> <p>Target participants: Younger or junior researchers (NPCs or senior team members shall not participate RTC)</p> <p>Estimated number: 35</p>
RAS 7040	RTC	RTC on groundwater flow modelling	Malaysia	November 2024	<p>Objective: To instruct hydro-geological and isotopes scientists from the participating member states the approach of simulating the flow of groundwater in the study area using isotopic and hydrogeological parameters.</p> <p>Target participants: NPTM and scientist from Universities or Water Resources Management Institutions</p> <p>Estimated number: 25</p>
RAS5088	MT	Final review meeting	Vientiane Capital, Lao PDR	25-29 Nov. 2024	<p>Objective: To review project progresses and activities, and summarize outputs and outcomes, extract potential success stories.</p> <p>Target participants: NPC or A/NPC or senior member of national project team.</p> <p>Estimated number: 20</p>

ANNEX 6

List of National RCA Representatives

Country	Name and Address
AUSTRALIA	<p>Ms Natascha Spark International Affairs Senior Manager Corporate Affairs Chief Operating Officer Group Australian Nuclear Science and Technology Organisation Locked Bag 2001, Kirrawee DC NSW 2232, AUSTRALIA</p> <p>Contact Person: Ms Pippa Ainley Senior Advisor, International Relations</p>
BANGLADESH	<p>Dr Ashoke Kumar Paul Chairman (Current Charge) Bangladesh Atomic Energy Commission E-12/A, Agargaon, Sher-e-Bangla Nagar, Dhaka-1207</p> <p>Contact Person: Dr A. K. M. Fazle Kibria (NLO) Director, International Affairs Division Bangladesh Atomic Energy Commission</p> <p>Mr Romy Parvez (NLA)</p>
CAMBODIA	<p>Mr Lek Vansopanha Director Department of Nuclear Science and Technology Ministry of Mines and Energy Kingdom of Cambodia</p>
CHINA	<p>Mr Huang Ping Division Director Department of International Cooperation China Atomic Energy Authority (CAEA)</p> <p>Contact Person: Ms Qiuqing Wu (Claire) Project Officer China Atomic Energy Authority (CAEA)</p>
FIJI	<p>Mr Shalendra Prasad Head of Agriculture Research Ministry of Agriculture P.O. Box 77, Nausori, Fiji</p> <p>Multilateral Bureau Ministry of Foreign Affairs</p>
INDIA	<p>Mr Sunil Ganju International Collaboration & Planning Division, Nuclear Control & Planning Wing (NCPW), Department of Atomic Energy, OYC Building, CSM Marg Mumbai 400 001</p> <p>Contact Person: Mr P.K. Sharma, Bhabha Atomic Research Centre (BARC) Trombay, Maharashtra 400 085 Mumbai</p>

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	Mr R. Heru Umbara Head, Bureau for Legal, Public Relations and Cooperation
	Mr Ros Intan Purbasari NLA
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	Contact Person: Yuma Kajihara Mr Keita Yamamoto Oshita Shun Mizuno Toshiaki
KOREA, REP. OF	Ms Si Jeong PARK Director, Nuclear and Fusion Energy Cooperation Division Space and Nuclear Energy Bureau Ministry of Science and ICT
	Contact Person: Ms Minyeon KIM Korea Nuclear International Cooperation Foundation
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	Siti Syarina Mat Sali (NLA) Fazli Zakaria (SA)

Country	Name and Address
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	Contact Person: Department of Atomic Energy Ministry of Education
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	Mr Pralhad Pokhrel (NLA 1) Under Secretary Ministry of Education, Science and Technology
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	Contact Person: Ms Ana Elena Lopo Conjares Supervising Science Research Specialist Philippine Nuclear Research Institute (PNRI)

List of National RCA Representatives

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SRI LANKA	<p>Mr Herath Mudiyansele Nisantha Ranjith Bandara (Interim NR)</p> <p>Contact Person: Mr Herath Mudiyansele Nisantha Ranjith Bandara Director, International Division, Sri Lanka Atomic Energy Board 60/460, Baseline Road Orugodawatta, Wellampitiya Sri Lanka</p>
THAILAND	<p>Ms Ampika Apichaibukol Director, Strategy and Planning Department Office of Atoms for Peace (OAP)</p> <p>Mr Yutthana Tumnoi (RCA Contact)</p> <p>Ms Benya Rajabhandaraks (NLO)</p> <p>Ms Chonrithon Boonprasop (NLA)</p>
VIET NAM	<p>Mr Tran Chi Thanh President Viet Nam Atomic Energy Institute (VINATOM) Ministry of Science and Technology 59 Ly Thuong Kiet Street, Hoan Kiem District, Hanoi</p> <p>Contact Person: Ms Tran Ngoc Hoan</p>
RCA Regional Office – Korea	<p>Mr Dae Ki, Kim Director, RCA Regional Office Korea Atomic Energy Research Institute (KAERI) Daedeok-daero 989-111, Yuseong-gu, Daejeon (34057) Republic of Korea</p> <p>Contact Person: Mr Mincheol Park Head, Programme Division</p>

* For more information, please visit <https://www.rcaro.org/states1>.

MAIN DECISIONS AND OUTCOMES OF THE POLICY LEVEL MEETINGS IN 2023

The 45th Meeting of National RCA Representatives
9-11 May 2023, Australia

1. Report on the follow-up actions of the 51st GCM by the RCA-FP

The Meeting acknowledges the report on the follow-up actions of the 51st GCM by the RCA-FP, emphasizing the importance of assessing the effectiveness of RCA TC Projects. Social and economic impact assessments for these projects were deemed necessary, along with mechanisms for regular follow-up reporting by GPs. TO facilitate assessments, NRs were urged to collaborate closely with LCCs and NPCs to gather and archive relevant data. The Meeting also recognized the IAEA's intention to host a Ministerial level meeting in November 2024 on nuclear application and technical cooperation and requested Government parties to highlight achievements under the RCA framework, especially since RCARO's establishment.

2. Report on the implementation of the RCA Programme in 2022 by the RCA FP

The Meeting took note of the 2022 RCA Programme report, thanking all involved for their effective implementation. The Meeting reviewed the draft RCA Annual Report 2022 and agreed on further input deadlines. Hosting Government Parties were asked to confirm their ability to host 2023 regional events by contacting the RCA FP.

3. Report of the RCA PAC on the progress and quality of RCA project designs for 2024 - 2025 and relevant issues by the RCA PAC Chair

The Meeting took note of the report of RCA PAC and appreciated the strong support and contribution provided by RCA PAC. The Meeting noted the progress made in:

- Monitoring the implementation of the RCA Programme for 2022/23
- Developing the RCA Programme for 2024/25, and
- The PAC's Activities as the RCA Research Review Committee

The Meeting approved the following recommendations by the RCA PAC regarding improving the RCA Programme development:

1. Ensure greater involvement of the RCA NRs in identifying projects of high regional priorities by allowing sufficient time for consultations at the NRS for
 - a. Improving the balance among thematic sectors
 - b. Enabling long-term planning
 - c. Identification of new needs
2. NRs reduce the excessive number of Pre-Concepts through better screening.
3. Provision of support and guidance for LCCs by the National Thematic Sector Coordinators be made.
4. Ensure the Nomination of contact persons by all participating GPs, to assist the LCCs in identifying the specific needs of the GPs.
5. Involvement of the end-users in project design be improved.
6. The RCA GOR be available as a more effective tool for informing RCA stakeholders of their responsibilities in project development.
7. Expansion of RCA financial resources be considered for future project development.

MAIN DECISIONS AND OUTCOMES OF THE POLICY LEVEL MEETINGS IN 2023

The Meeting endorsed the following recommendations by the RCA PAC related to the implementation and monitoring of the progress of RCA projects:

1. The past practice of making presentations on the progress of RCA TC projects at NRMs be recommenced.
2. A platform on the RCA website be established for the submission and evaluation of progress reports and for storing all project-related information.
3. Nominees for regional events be members of national project teams.
4. NRs inform the IAEA and the LCCs on changes in NPCs.
5. A database containing details of regional experts and facilities that can provide RRU services be established.
6. Consultations between the NR, the LCCs and the NPCs be improved.
7. The LCCs and NPC have a good understanding of their roles and responsibilities.
8. Periodic submission of Progress Reports by NPCs be ensured.
9. Availability of national resources and facilities for project implementation be ensured, if possible.
10. Persons nominated for regional events are members of national project teams be ensured, if possible, noting it is sometimes appropriate to invite other experts to attend.
11. The number of GPs to projects be limited to those GPs with a strong Government commitment, i.e. projects that are aligned with national needs.

The Meeting also agreed and endorsed the proposed time frame for the development of the RCA Programme for 2026/27 as below:

Time Frame	Activity
May – July 2023	Submission of Pre-Concepts for the projects to be implemented under the RCA Programme for 2026/27 by NRs
1 st August 2023	Deadline for submission of Pre-Concepts for 2026/27 programme
2 nd August – 10th September 2023	Review of the Pre-Concepts by PAC
10 – 17 September 2023	Consolidation of the reviews of the Pre-Concepts by PAC Chair
22 nd September 2023	Presentation of the outcomes of the reviews to the 52 nd RCA General Conference Meeting
22 nd September – 31 st December 2023	Preparation and submission of Project Concepts by NRs
January – February 2024	Review of Project Concepts by PAC
March-May (TBC) 2024	Submission of the recommendations of PAC to the 46th NRM

4. Report of the WG on the RCA 2018-2923 MTS Coordination by the Chair of the WG

The Meeting acknowledged the WG report on the RCA 2018-2023 MTS Coordination and its 2023 work plan/ It noted the Limited Final Review of the MTS, with GPs agreeing to provide feedback by June 12, 2023. NRs were requested to share feedback on proposed TORs for new committees by the same date. A face-to-face WG meeting in July 2023 in Vienna, Austria, was endorsed, subject to budget availability.

5. Report of the RCARO Standing Advisory Committee (SAC) on the activities of the RCARO by the RCA Chair

The Meeting took note of the report of the 36th Meeting of RCARO SAC presented by the RCA Chair and endorsed its recommendations as attached in Annex 15.

6. Report of the WG on drafting RCA 2024-2029 MTS by the Chair of the WG-MTSD

The Meeting took note of the report of the WG on drafting RCA 2024-2029 MTS delivered by the Chair of the WG and approved their updated work plan as below:

Time Frame	Activity
July 2023	The MTS first draft for NRs’ review and comments
November 2023	The MTS 2 nd draft for NRs’ review and comments
April 2024 (46 th NRM)	The MTS final draft for NRs’ review and comments

The Meeting endorsed a face-to-face WG meeting either in August or September 2023, in Vienna, Austria, subject to the budget availability.

7. Report of the Committee of the RCA Scholarship Programme by the Chair of the Committee

A consensus was not reached on the proposed scholarship programme and its pilot. Delegations thanked the committee for their commitment and significant work on the important issue of human resource development. The meeting encouraged GPs to continue to explore domestic and bilateral/multi-lateral scholarship programmes, including through relevant TC programmes of the IAEA and acknowledged the several existing scholarship programmes currently underway in RCA countries.

8. Report from the virtual meeting of National Representatives held on 18 April 2023 on proposed action plans for deployment and execution of the RCA Declaration Vienna 2022 and the invitation to all NRs to speak to share their ideas on implementing the Ministerial Declaration

The Meeting took note of the concept papers to:

- Establish and operate a Network of National Nuclear Research Institutes (NNRIs) of the RCA Government Parties prepared by the RCARO; and
- Organize a forum on Technology Transfer/Diffusion of Proven Nuclear Technologies under the RCA prepared by VIE.

Government Parties may provide comments on the concept papers to RCARO, VIE and the RCA Chair by 12 June 2023.

9. Update on the acceptance of the 2017 RCA

The Meeting noted the advice that twenty (20) of the twenty-two (22) GPs have submitted their instrument of acceptance of the 2017 RCA to the IAEA. The Meeting looked forward to the remaining two (2) GPs (FIJ and LAO) depositing their instrument of acceptance soon.

10. Arrangements for the 52nd RCA GCM, the 46th and the 47th RCA NRMs

The Meeting noted that the 52nd GCM will be held on 22nd September 2023. CPR confirmed that the 46th NRM will be held in China in 2024, with the specific dates and venue to be confirmed in due course. The 47th NRM may be held in FIJ in 2025, subject to the confirmation of the Government of FIJ.

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POLICY LEVEL MEETINGS IN 2023

11. Any other business

The Meeting noted the possible duplication in the functions of existing working groups and proposed committees and strategic documents, and recommended that the RCA Committee of Chairs conduct a rapid review of:

- The functions of all current and proposed Working Groups (WGs) / committees
- The role of the RCA Medium Term Strategy in other RCA documents (RCA Agreement, RCA Guidelines and Operating Rules, and RCA Regional Programme Framework).

The Meeting requested that the Committee of Chairs present their findings to NRs at the upcoming 52nd RCA GCM for further deliberations. The Meeting noted the need for a systematic approach to budgeting for the RCA and agreed to put this on the agenda of the 46th NRM.

The 52nd RCA General Conference Meeting
22 September 2023, Austria

1. RCA Programme by IAEA Secretariat RCA Focal Person

The Meeting took note of the report by the RCA FP on the RCA Programme. In regards to the regional events in 2023, the Meeting noted that a total of 18 events have been implemented this year until the GCM, 13 events are to be implemented until the end of this year, and two events are postponed to Q1 of 2024.

In regards to the current ongoing projects, the Meeting approved recommendations by RCA FP as below:

- The RCA National Representatives (NRs) are requested to:
 - Collaborate closely with National Project Coordinators (NPCs) and National Project Teams (NPTs), providing necessary guidelines/ support for effective implementation;
 - Ensure appropriate nominees attend regional events by working closely with NPCs, submitting nominations through InTouch+ promptly;
 - Require NPCs to prepare and submit annual progress reports timely for NR review and endorsement before forwarding to Lead Country Coordinators (LCCs). Endorse reports should reach LCCs by January 10, 2024, and submission of Project Progress Assessment Reports (PPARs) to the IAEA by February 10, 2024.
- The NRs of the LCs are requested to:
 - Work closely with their LCC(s) and provide necessary advice/support to ensure LCCs can discharge their duties successfully,
 - Ask their LCC(s) to frequently contact relevant NPCs to update the project implementation in each participating country,
 - Request their LCCs to ask relevant NPCs to submit the annual project progress report by 10 January 2024, then LCCs prepare and submit PPARs to NRs of Lead Countries for review and endorsement before submitting them to the IAEA by 10 February 2024.
 - Request their LCCs to prepare and submit highlights of their project in 2023 to NRs of LCs for review and endorsement before submitting to the RCARO and the IAEA for RCA Annual Report 2023 by the end of February 2024.

For the planning of regional events for 2024, the Meeting approved recommendations by RCA FP as below:

- The NRs are requested to;
 - Encourage NPCs to volunteer to host relevant regional events and provide the necessary support,
 - Coordinate with the Permanent Mission of their countries to the IAEA to send official acceptance to host a regional event well in advance, at least 4 months before the event starts.
- The NRs of the LCs are requested to;
 - Request their LCCs to work closely with relevant NPCs, IAEA Technical Officers (TOs), and RCA FP to finalize the list of planned regional events for 2024 by the end of October 2023.

The meeting noted the submission of seven designs for the RCA Programme 2024-2025 to the IAEA Board of Governors in November 2023. NRs were asked to submit Project Participation Forms (PPFs) for desired projects by December 31, 2023, to ensure swift implementation from Q1/2024. NRs of LCs were advised to prompt LCCs for new RCA projects to coordinate with IAEA TOs and IAEA RCA FP for scheduling the first project coordination meeting in 2024.

2. RCA TC Cycle 2026/2027 by RCA Chair and PAC Chair

The Meeting took note that seven designs for the RCA Programme 2024-2025 were finalized and submitted to the IAEA Board of Governors for approval in November 2023. To ensure the new RCA projects are implemented right from Q1/2024, the Meeting requested the NRs to submit Project Participation Forms (PPFs) for the projects their country would like to participate in, by the end of December 2023. The Meeting recommended the NRs of LCs request LCCs for the new RCA projects to work closely with IAEA TOs and IAEA RCA FP to organize the first project coordination meeting in 2024 as soon as possible.

The Meeting endorsed that the following 20 pre-concepts be developed into project concepts.

No	Sector	Title	LC
1	Agriculture	Application of mutation breeding and related biotechnologies for the development of disease tolerance in vegetatively propagated crops in the Pacific Islands	FIJ
2		Creation of a new regional research and service capability for Food Irradiation Testing (FIT)	AUL
3		Promoting the application of high-energy electron accelerator irradiation on improving the quality and industrialization of prepared foods	CPR
4		Enhancing Consumer Education of Food Irradiation through Modern Media Platforms: A Path to Transparency and Harmonization	INS
5	Environment	Enhancing Air Quality in the Region through e-Beam Technology to Mitigate Air Pollutants and Improve Capacity	ROK
6		Effective observation and management of coastal groundwater aquifers using isotopic techniques	AUL
7		Sediment transport and movement of pollutants from shore to sea, modelling of the process for understanding distribution in mangroves and marine biota using radioactive tracers	IND
8		Capacity Building in Water Quality Assessment and Chemical/Isotope Evaluation Techniques for the Asia Pacific Region	NEP
9		Enhancing regional capabilities for Marine Radioactivity Monitoring through Establishing a Regional Database and Transfer of Advanced Analytics Techniques	ROK

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10	Human Health	Sustainable production and supply of alpha-emitting radionuclide Astatin-211, theragnostic radionuclide Copper-64 and handling of its radiopharmaceuticals	JPN
11		Enhancing Theranostic Technology of Radiotherapy and Radiopharmaceuticals for Women’s Cancers through Education and Training	ROK
12		Improving the Education of Radiation Therapists (RTTs) in the Asia Pacific Region	INS
13		Strengthening the use of SBRT and to Establish Consensus on SBRT Protocols used in Asia and the Pacific Region through Collaboration among Radiotherapy Professionals	PAK
14		Enhancing the Quality and Safety of Clinical Practice in Nuclear Medicine among RCA Government Parties through Auditing, Professional training and Strengthening Capacity and Capability of the Emerging Theranostic Radiopharmaceuticals	THA
15	Industry	Enhancing Quality Management Practices for Sustainability of Radiation Processing Facilities in the Region	MAL
16		Promoting the Application of Electron Beam Technology for Wastewater Treatment and Recycling in the Asia-Pacific Region	CPR
17	Radiation Protection	Enhancing Occupational Radiation Protection Capabilities and Coordination in the Asia-Pacific Region	CPR
18		Sustainable Radiation Safety Training	AUL
19		Capacity Building for Evaluating Ionizing Radiations in the Air and Associated Hazards in the Asia Pacific Region	NEP
20	Nuclear Security	Nuclear Science and Technology Applications to Strengthen Border and Nuclear Security: Improved Cargo Scanning, Standards and Training	AUL

The Meeting agreed to merge the below four pre-concepts into two project concepts and encouraged the below three GPs to work together to identify the Lead Country [LC].

With the merging, a total of twenty-two (22) project concepts will be developed.

No	Sector	Title	LC
1	Agriculture	Advancing Regional Capabilities for the Safety of Food Products through Implementation of Isotopic and other Nuclear Techniques	MAL
2		Promoting the Application of Stable Isotopes and Related Techniques for the Traceability of High-value and Bulk Food	CPR
3	Industry	Enhancing Safety and Performance in Industry and Civil Structures Through Internet of Things and Big Data Technology on Advanced NDT & E Techniques	INS
4		Establishing regional capabilities in NDT 4.0 for improved inspection efficiency and reliability of industrial components	MAL

The Meeting endorsed the below-proposed actions by RCA PAC. NRs are requested to;

- Appoint LCCs for drafting Project Concepts for consideration at the next NRM, by the procedure for the Development of RCA Projects, outlined in Annex 8 of the GOR and provide their contact details to the RCA Chair, RCA FP, and PAC Chair;
- Submit the Project Concepts before the deadline of 31st December 2023;
- Provide the comments of the PAC contained in this paper to the appointed LCCs, including the recommendations for the merger of Pre-Concepts on similar topics.
- Nominate a contact person with whom the LCCs can communicate to obtain the information required to develop the Project Concepts.

The Meeting requested the Committee of RCA Chairs to review the process for developing and selecting RCA TC projects, including a review of the RCA GOR for alignment with GP needs. It was agreed to maintain the current method for ranking project concepts in this TC cycle, with the Committee of RCA Chairs to consider proposed changes in their review.

3. RCA Chairs Committee Rapid review of RCA Working Groups, Committees and strategic documents, by the RCA Chair

The Meeting took note of the rapid review of RCA WGs, Committees and strategic documents by the RCA Chairs’ Committee and approved the following recommendations:

- The Regional Programme Framework 2024-2029 remains the guide for program development and project selection criteria.
- A concise one-page plan will accompany the MTS for NR consideration, with progress tracked and updated at NRMs instead of establishing a separate working group.
- Future committee terms are limited to two years, with NRs reviewing effectiveness annually and ensuring committee members prioritize RCA Programme matters.
- The RCA TC Program will be a regular agenda item in NRMs to enhance NR engagement.
- NRs will consider ‘rapid reviews’ by the RCA Committee of Chairs to address important issues, completing their work between two NR meetings.
- The IAEA and RCARO will provide training for NRs on all stages of the program lifecycle to enhance ownership and sustainability of the RCA TC program.

4. RCA Working Groups

The Meeting took note of the report of the Chair of WG on drafting RCA 2024-2029 and endorsed the work plan. The Meeting requested the NRs to review and provide comments on the drafted Strategic Directions by the 3rd of November 2023. The Meeting took note of the report delivered by the Chair of the WG on the RCA 2018-2023 MTS Coordination and agreed that NRs need more time to review and consider the recommendations.

5. RCARO

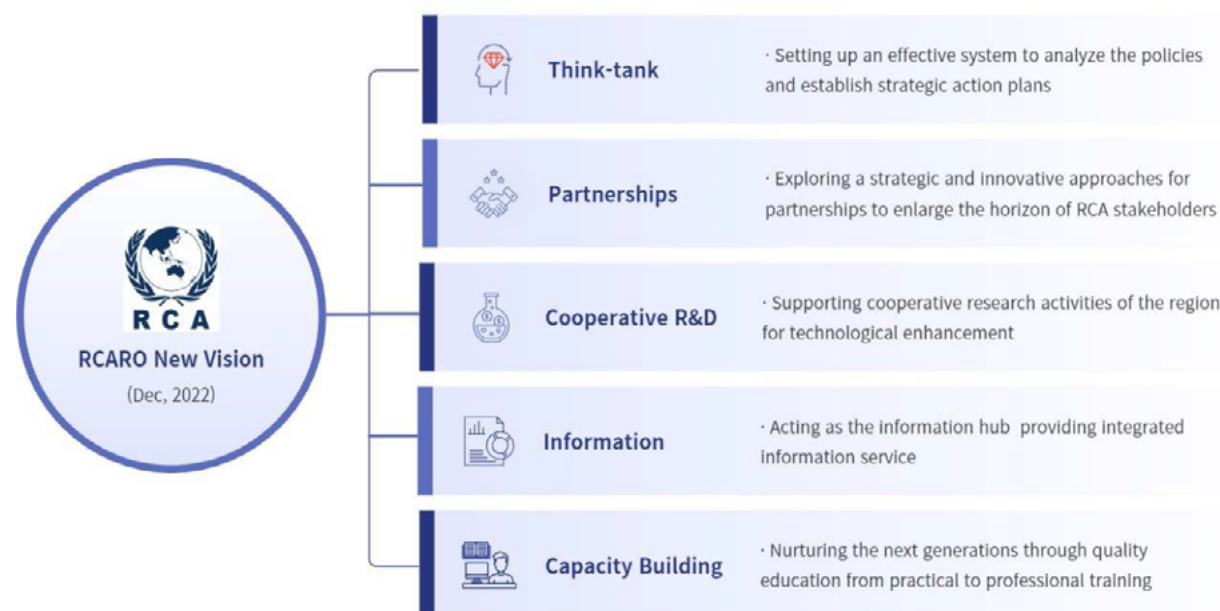
Noting the completion of the current RCARO Director’s term by year-end, the Meeting commended their leadership over the past four years. Progress in 2023 was noted, and the remainder of the year’s work plan was endorsed. The Meeting also noted the “Handbook on the RCA and RCA GOR” developed by the RCARO, requesting NRs to provide comments by November 17, 2023.

6. 2017 RCA by IAEA Secretariat RCA Focal Person

The Meeting noted the advice that twenty-one (21) of the twenty-two (22) GPs have submitted their instrument of acceptance of the 2017 RCA to the IAEA. The Meeting looked forward to the remaining GP (FIJ) depositing their instrument of acceptance soon.

RCARO 2023 Work Performance

As part of the transition to the next 20 years in December 2022, RCARO set out its future vision and strategies under the following five strategic pillars:



In 2023, RCARO supported the RCA according to each strategy and successfully carried out various activities.

1. Establishing the Asia-Pacific Nuclear Think-Tank for the RCA

In order to provide more effective support to the RCA, RCARO reformed its organizational structure and established the “Policy and Information Centre”. To strengthen the role of the “think-tank of the RCA region, RCARO, with the support of this Centre, aims to assist 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. Throughout 2023, RCARO assisted and performed secretariat functions for the RCA GPs, the RCA Chairs’ Committee and the IAEA.

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.

According to the recommendation of the 45th RCA NRM, the RCARO drafted a handy guidebook on the 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.

2. Enlarging the Horizon of the RCA Stakeholders in the Region and Beyond

Based on the successful event held in November 2022, with the US DOE, the “Workshop on Accelerating the Adoption of EBeam/X-ray Technologies in Asia and the Pacific, the RCARO developed the concept for the new partnership project with the US DOE and reported to the 36th RCARO SAC meeting and 45th RCA NRM in May 2023. The RCA endorsed the final project design in September 2023. This project will be implemented over the next 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 eBeam infrastructure and facilitating of its applications. The First Project Coordination Meeting was held in Bangkok, Thailand on 12-15 December 2023, with more than eighty (80) representatives from the twenty-one (21) RCA Government Parties, experts from the US, and the IAEA.

In addition, under the partnership project with the ASEAN Network of Regulatory Bodies on Atomic Energy (ASEANTOM), RCARO developed visual manuals and handbooks to enhance emergency preparedness and response (EPR) capabilities in 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. As a follow-up, Regional Training Course on Enhancing Technical Capabilities on Radioactivity Measurements for Environmental Radiation Monitoring during Radiation Emergencies was held from 21 to 24 August 2023, training 14 participants from 6 countries. The course provided advanced theoretical and practical training on rapid and accurate radioactivity measurements during a radiological emergency.

3. Supporting the Technical Advancement of the RCA through R&D Cooperation

Through RP02 and RP03, the RCARO has supported the cooperative research activities of the RCA. This year, under both projects, Project Coordination Meetings and Technical Workshops were held inviting regional experts in the fields of air pollution treatment and radiotherapy. These events provided a forum for networking and knowledge/know-how sharing among the experts and facilitated R&D in relevant fields. As the RP02 will be completed by the end of 2023, the RCARO is drafting an achievement report of the project to promote and highlight the major outcomes and progress made in the RCA region. The report will be published in the first half of 2024.

4. Building up the RCA Integrated Information System

In 2022, the RCARO launched the RCA Integrated Information System, which aims to provide comprehensive information and data on the RCA as well as the overall status and trends of NS&T in the Asia-Pacific region. The RCA website has been reformed to provide four main functions: the RCA website, the NS&T Data Hub, the RCA E-CAMPUS, and RCARO e-Management.

The Practical Arrangements between the IAEA and RCARO signed in September expanded its cooperation on effective information/data information sharing on the RCA projects to provide a better information service on the RCA and its programme.

The Data Hub is also in the process of collecting information to provide relevant and comprehensive information on the NS&T of each GP. This is expected to make the data hub a valuable resource platform for setting up future directions and strategies for the RCA, as well as designing future projects.

5. Nurturing the Next Generations through Quality Education Programs

Since its establishment, RCARO has conducted various capacity-building activities and trained more than 1,300 professionals in the application of nuclear science and technology. The RCARO Scholarship Programme is one of them and aims to provide scholarships for Masters and PhD students to study and carry out R&D activities. Three leading educational institutes in Korea are cooperating with RCARO under this programme: KAIST, KINGS and UST. RCARO newly supported one student from SRL from KAIST course and five (MON, THA, INS (2), PHI) FOR KINGS course and two students from KINGS. RCARO also launched a new Master’s degree and PhD scholarship programme in cooperation with the University of Science and Technology (UST) and accepted ten students to start their studies in the spring semester 2024.

For further details, please visit the website: <https://www.rcaro.org/activities>.

REPORT ON TCDC ACTIVITIES IN 2023

According to the revised RCA Guidelines and Operating Rules (GOR) which was adopted by the 47th RCA GCM in 2018, **ANNEX 9 – REPORT ON TCDC ACTIVITIES** is added to the RCA Annual Report which incorporates the data on the activities of Technical Cooperation among Developing Countries (TCDC). TCDC activities would be any sharing of a developing country’s experience and/or resources with any other developing country. They could be in the form of providing experts under the RCA Programme or any other form of contribution by a developing country (DC).

1. Percentage of experts from DCs:

Total Number of Experts	Number of Experts from Developing Countries	Percentage
35	12	34.28%

2. Services provided by DCs to DCs

Provider	Recipient	Service
-	-	-

3. Hosting of training courses by DCs:

Total Number of Training Courses	Number of Training Courses Hosted by Developing Countries	Percentage
15	10	66.66%

4. Hosting of meetings/workshops by DCs:

Total Number of Meetings	Number of Meetings Hosted by Developing Countries	Percentage
15	6	40%



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