

**Public Version**



**REGIONAL COOPERATIVE AGREEMENT**

**ANNUAL REPORT 2019**

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## **SECTION 1 - OVERVIEW OF THE RCA PROGRAMME IN 2019**

### **1. Summary of the RCA Programme in 2019**

There were thirteen (13) active projects in 2019, among which there were four (4) projects in the field of human health, three (3) projects in food and agriculture, three (3) projects in the field of environmental protection, one (1) project on groundwater resources, one (1) project in the industrial application and one (1) project in support of the RCA management. Four of the projects (RAS0082, RAS6085, RAS7029 and RAS7030) were completed at the end of 2019, having achieved salient results. The highlights of all active projects are given in Section 2. Detailed information on them is available on the IAEA web-based platform Programme Cycle Management Framework (PCMF).

*List of RCA projects in 2019 is shown in Annex 1.*

In 2019, fourteen (14) regional training courses (RTCs) were held with thirty-four (34) experts recruited as lecturers, among whom fourteen (14) were from the region. Three-hundred-and-thirty-six (336) persons were trained in these training courses. Fifteen (15) regional meetings were held in 2019. These included project progress and final review meetings, project planning meetings, expert meetings and workshops. A total of two-hundred-ninety-four (294) participants, including twenty-eight (28) experts, participated in these meetings. In addition to these project-related meetings, two (2) policy level meetings were conducted, namely the 41st Meeting of National RCA Representatives and the 48th RCA General Conference Meeting.

*Participation by GPs in RCA events in 2019 is presented in Annexes 2a-b.*

In addition, fifteen (15) expert missions were conducted in 2019, which provided necessary technical assistance to some GPs for their effective participation in RCA projects. The total duration of the missions was seventy (70) expert-days, and of the twenty-two (22) experts recruited, sixteen (16) were from the RCA GPs. Five (5) home-based assignments were implemented, which were carried out by 6 experts, all of them from the region. The total duration of the home-based assignment was seventy-five (75) expert-days.

*RCA expert missions and home-based assignments in 2019 are listed in Annexes 2c-d.*

### **2. Management and Implementation of the RCA Programme in 2019**

#### **2.1 Summary of Financial and In-Kind Contributions**

The budget allotment from the TC Fund for 2019 was €1.657 million. The encumbrances and actuals in 2019 were €1.557 million at an Implementation Rate of about 93.96%.

Government Parties (GPs) continued supporting the RCA programme through extra-budgetary contributions and in-kind contributions. In 2019, a total of €216,960 in extra-budgetary contributions were received from China, Korea, Malaysia and Philippines.

*List of extra-budgetary contributions 2015-2019 is shown in Annex 3*

“In-kind” contributions have been recognized 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 the implementation of 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 €681,961 in 2019.

*Detailed account of ‘In-kind contribution’ per RCA GP is shown in Annex 4.*

## **2.2 Planned Regional Events in 2019**

The implementation of the RCA activities focused mainly on regional training courses and meetings. Hosting RCA events is voluntary, and the RCA GPs have been very cooperative in this respect. By hosting events, the GPs not only contribute to the RCA programme but also have the opportunity to benefit from the regional events as more national participants can attend.

In 2019, eleven (11) RCA GPs extended their cooperation and support to the RCA by hosting RCA regional events (meetings and training courses). It is expected that those GPs which have not had the opportunity to host RCA events will consider doing so in the future.

*Indicative plan for RCA regional events in 2019 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 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 reports to LCCs in time so that LCCs have sufficient inputs and time to consolidate and submit PPARs to the IAEA.

In addition, the progress of the projects was also reviewed at the 41st Meeting of the National RCA Representatives and the 48th RCA General Conference Meeting. These mechanisms have proved to be useful in the monitoring of projects and identification of challenges in project implementation and it will be continued.

## **2.4 Challenges in Implementation**

Although the RCA programme was successfully implemented in 2019, with a view to further enhancing the effectiveness and efficiency of the RCA programme, it is extremely important that technically capable and experienced persons be designated as NPCs and Alternate NPCs as stated in the RCA GOR. National Project Teams should consist of personnel with the required expertise. GPs should also provide information on physical infrastructure and human resources and Regional Resource Units in the Project Participation Forms prior to the start of project implementation.

Some GPs have experienced difficulties submitting nominations through the IAEA InTouch+ platform in 2019 due to technical issues with the platform. Interventions from InTouch+ Support Team have helped resolve some of the problems. GPs that did not have the same technical difficulties with the platform have found it reduces the time required to upload hard copy nominations into the system and avoids unexpected errors and/or missing nominations that might happen when submitting through e-mail. NRs are encouraged to continue to fully utilize the IAEA InTouch+ platform to submit nominations. Hard copy nominations should be submitted through Official Mail only in exceptional cases.

## **3. Summary of the RCA Regional Office (RCARO) Activities Related to Promotional and other non-technical Activities in 2019**

RCARO continued its efforts in 2019 to publicize the activities of the RCA and establish collaborations with other international/regional organizations with common interests.

RCARO promoted the RCA through publication of the RCA brochure, operation of the RCA website ([www.rcaro.org](http://www.rcaro.org)), participation in various regional/international conferences and the RCA expert support programme. In an effort to enhance partnership, RCARO implemented RCA/UNOSSC partnership project on Electron Beam Applications for Value Addition to Food

and Industrial Products and Degradation of Environmental Pollutants in the Asia Pacific Region and explored partnerships with the ASEAN. To expand support for the benefits of the RCA GPs, RCARO continued implementation of the RCA Research Project on Air Quality and Environmental Impact Assessment of Industrial Activities in Asian Region, under the RCARO Managed Project and initiated development of e-learning modules on nuclear medicine as a follow up of RAS6083, which was completed in 2018.

RCARO continued updating information on the RCA and its projects on the RCA website. According to the recommendation of the 41<sup>st</sup> NRM to upload project documents provided by the LCCs of the completed RCA projects, RCARO upgraded the project platform of the RCA website to accommodate the documents more effectively. Based on the information on the Project Participation Forms and PCMF, RCARO updated information on project duration, LCs, LCCs, (A)NPCs and details of RRUs on the platform. In addition, RCARO also created a new page for uploading pre-project concepts for 2022-2023 RCA programme and provided resource documents to support GPs in developing project concepts.

In accordance with the decision of the 45<sup>th</sup> GCM, RCARO also supported the IAEA in its secretariat functions such as preparation of the RCA policy meetings, namely the 41<sup>st</sup> NRM and the 48<sup>th</sup> GCM, and coordination of WG activities.

- Under the RCA Research Project, RCARO held the Research coordination meeting in June, Mongolia, inviting 21 participants from 12 participating countries, including CPR and MYA newly joined in 2019, technical officer and members of Research Review Committee (RRC). The meeting reviewed the status of research activities on air pollution monitoring in the region, finalized work plan of each country, and discussed the 2<sup>nd</sup> phase of the project. RCARO made financial contributions for Research Contract Holders based on the RRC's review on the CSI Annual Progress Reports.
- Under the RCA/UNOSSC project on Electron Beam Applications, RCARO held a Regional Training Course for advanced materials in June, Korea, inviting 16 trainees from 12 participating countries. Expert missions to VIE and BGD were implemented and experts shared know-hows and experiences in wastewater treatment and other applications of EB technology with national experts and policy makers. Annual review meeting combined with technical workshop was held in November, Korea, inviting 32 participants from participating countries, UNOSSC and RCARO. The meeting reviewed project achievements and confirmed detailed work plan for 2020.
- In an effort to seek partnerships with the ASEAN, RCARO endeavoured to establish partnership with the ASEANTOM (ASEAN Network of Regulatory Bodies on Atomic Energy). A Regional Training Course on rapid radiation measurement and individual dose assessment following nuclear & radiological emergency was held in October, Thailand, inviting 31 participants from 10 countries.
- As a follow up of RAS6083, RCARO decided to support development of e-learning modules on nuclear medicine based on the recommendations of the project meetings and needs of the GPs. RCARO organized an expert meeting in April, Korea, inviting 14 experts including ALCC and NPCs of RAS6083 to review and discuss areas/contents of the modules and set up work plan for 2019-2020. According to the work plan, a total of 30 modules in 6 areas (cardiopulmonary, endocrinology, neurology, neuro-oncology, oncology, and physics) were developed by 36 experts from 14 countries. RCARO is in the process of uploading the modules and upgrading the e-learning platform on the RCA website.

*The RCARO actions related to promotional and other non-technical activities in 2019 are given in Annex 8.*

## SECTION 2 - DETAILS OF THE TECHNICAL PROGRAMME IN 2019

### ➤ Others

<b>RAS0082</b>	<b>Facilitating Activities Implemented under the RCA Framework</b>
<b>Objective</b>	<b>To facilitate the implementation of the 2018 RCA and the enhancement of the effective and efficient operation and management of the RCA programme</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	RCA PAC Meeting to review 2 <sup>nd</sup> Round Project Designs	To review the 2 <sup>nd</sup> drafts of the project designs and agency feedback	21-25 Jan.	Austria
<b>Meeting</b>	5 <sup>th</sup> Meeting of the Working Group on the Coordination of the RCA Medium Term Strategy	To review the status of the Working Group's annual work plan and to prepare a status report for the 41 <sup>st</sup> NRM	28-31 Jan.	Austria
<b>Meeting</b>	Preparatory and Follow-up Meetings and the 41 <sup>st</sup> Regional Meeting of National RCA Representatives	To review and decide on the RCA programme as well as other RCA related issues	25-30 Mar.	Sri Lanka
<b>Meeting</b>	RCA PAC Meeting to Review "In-Kind" Contributions	To conduct the NR assigned review of "in-kind" contributions	6-10 May	Austria
<b>Meeting</b>	6 <sup>th</sup> Meeting of the Working Group on the Coordination of the RCA Medium Term Strategy	To review the status of the Working Group's annual work plan and to prepare a status report for the 48 <sup>th</sup> GCM	29 Jul. - 1 Aug.	Korea
<b>Meeting</b>	Preparatory Meetings and the 48 <sup>th</sup> RCA General Conference Meeting	To review and decide on the RCA programme as well as other RCA related issues	12-13 Sep.	Austria

## Project highlights for 2019

The project supported the management of the RCA programme in an effective and efficient manner. Two meetings of the RCA programme Advisory Committee were held to review the second drafts of project designs and the IAEA's feedback in preparation of the RCA programme for 2020/2021 TC Cycle and review the mechanism for reporting of the in-kind contributions by the GPs respectively. Other issues such as revision of the procedure for RCA projects supported by the IAEA TC programme, high turnover of the National RCA Representatives and matters related to the 50<sup>th</sup> anniversary of the RCA were considered during the meetings.

Meetings of the Working Group on RCA Medium-Term Strategy Coordination and RCA policy meetings were held as planned to decide on strategic and politic issues with regard to the effective implementation of the RCA programme.



48<sup>th</sup> RCA General Conference Meeting  
September, Austria



6<sup>th</sup> Meeting of the WG on the RCA MTSC  
July, Korea



RCA PAC Meeting to Review "In-Kind"  
Contributions, May, Austria



41<sup>st</sup> Regional Meeting of National RCA  
Representatives, March, Sri Lanka



➤ **Industry**

<b>RAS1022</b>	<b>Strengthening Regional Capacity in Non-Destructive Testing and Examination Using Nuclear and Related Techniques for Safer, Reliable, More Efficient and Sustainable Industries Including Civil Engineering</b>
<b>Objective</b>	<b>To improve regional capabilities in the application of NDT/E to support the requirements of industries, including civil engineering for sustainable industrial development</b>

**Project Activities in 2019**

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	Regional Workshop on Non-Destructive Testing (NDT) Examination Qualification and Certification Scheme Requirements in Accordance with the Latest Edition ISO 9712 and ISO17024	To support the establishment of regional network for mutual recognition in NDT/E personnel certification	6-10 May	Philippines
<b>Training Course</b>	RTC on Radiographic Testing RT-D Level 2 for Personnel Certified to Radiographic Testing RT-F Level 2	To train and qualify participants in RT-D	10-21 Jun.	Malaysia
<b>Meeting</b>	Regional Workshop on the Application of NDT for Civil Engineering Structures	To develop the educational and training documents and requirements of inspection personnel including syllabi training notes and the identification of suitable equipment for the successful investigation of failures and potential failures in civil structures	7-11 Oct.	New Zealand
<b>Expert</b>	Home-based Assignment	For drafting training material on Phased Array Ultrasonic Testing	1-21 Dec.	Australia

**Project highlights for 2019**

This 4-year project commenced this year with a regional workshop held in May in the Philippines, involving 24 participants from 20 GPs. Various issues with respect to NDT qualification and certification system requirements in accordance with the latest edition of ISO 9712 and ISO 17024

were discussed and the needs of the GPs in terms of exam database, test specimens and training course materials were identified during the event. In result, collective actions among the GPs were agreed to be taken based on the requirements.

The first regional training course was held in June in Malaysia to deliver RT-D Level 2 training and examinations in accordance with ISO 9712. Among 21 participants from 14 GPs, 13 candidates passed the theoretical and practical examinations and were qualified to apply for the internationally recognized ISO 9712 RT-D certification, once they fulfil the industrial experience and visual requirements.

Another regional workshop was held in October in New Zealand, dedicated for developing draft documents for training and on qualification and certification of NDT personnel for civil engineering structures. Attended by 21 participants from 16 GPs, the workshop successfully produced the desired draft documents as well as initiated efforts to include NDT for civil engineering structures in ISO 9712 document.



WS on NDT Examination Qualification and Certification Scheme Requirements in Accordance with the Latest Edition ISO 9712 and ISO17024, May, Philippines



RTC on Radiographic Testing RT-D Level 2 for Personnel Certified to Radiographic Testing RT-F Level 2, June, Malaysia

➤ **Agriculture**

<b>RAS5077</b>	<b>Promoting the Application of Mutation Techniques and Related Biotechnologies for the Development of Green Crop Varieties</b>
<b>Objective</b>	<b>To increase environmentally friendly crop productivity through the application of mutation techniques and related biotechnology</b>

**Project Activities in 2019**

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Training Course</b>	RTC on Methodology and Mechanisms for Screening of	To provide theoretical background and techniques to assess and evaluate the photosynthetic efficiency in mutant populations	17-21 Jun.	Philippines

	Photosynthetic Efficiency in Crops			
<b>Meeting</b>	Meeting on Assessing Nutrient Use Efficiency in Mutation Breeding Programme	To provide updated information on methodologies suitable for assessing nutrient use efficiency in a mutation breeding programme	19-23 Aug.	China
<b>Training Course</b>	RTC on Molecular Approaches for Selection of Desired Green Traits in Crops	To provide technical and practical knowledge on modern molecular technologies for mutation discovery	4-15 Nov.	Indonesia

### Project highlights for 2019

In the third year of this project, two regional training courses were conducted in June in the Philippines and in November in Indonesia respectively. In the Philippines, the course focused on providing theoretical background and techniques to screen the photosynthetic efficiency in mutant populations, while it disseminated technical and practical knowledge on modern molecular technologies for identifying green traits in crops.

In addition, a meeting was held in August in China to provide recent information on methodologies for assessing nutrient use efficiency in a mutation-breeding programme.

<b>RAS5081</b>	<b>Enhancing Food Safety and Supporting Regional Authentication of Foodstuffs through Implementation of Nuclear Techniques</b>
<b>Objective</b>	<b>To improve food safety, enhance consumer confidence and increase trade by establishing a robust and independent means of verification of origin of foodstuffs</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Training Course</b>	RTC on Multivariate Data Analysis Using the Chemometrics Add-in for Microsoft Excel including DD-SIMCA	To introduce the use of the software package “Chemometrics in Excel” covering basic principles, principal component analysis, data driven soft independent modelling by class analogy and discriminant analysis	15-19 Apr.	China
<b>Training Course</b>	RTC on the Fundamentals of Using Nuclear Techniques for	To provide participants with operational intermediate level knowledge and skills in the use of IRMS, Molecular	23-27 Sep.	China

	Verifying Food Authenticity (Part II)	Spectroscopy, Atomic Absorption and ICP-MS		
<b>Meeting</b>	Mid-term Project Review Meeting	To review and assess the progress of project implementation, discuss and update work plan, agree on measures that need to be taken to ensure the project will achieve the objective set out	18-22 Nov.	Vietnam

### Project highlights for 2019

The project started its second year with a training course on multivariate data analysis hosted by the Chinese Academy of Agricultural Sciences (CAAS) in April in China. It introduced chemometric methods to the participants covering basic principles, principal component analysis and data driven soft independent modelling by class analogy and discriminant analysis.

The following training course on the fundamentals of nuclear techniques was also hosted by CAAS in September. It introduced several analytical procedures for verifying the authenticity of food, including isotope and trace metal measurements as well as complimentary techniques such as spectroscopy. This event was unique in that several trainees from previous courses participated as trainers, leading a number of the sessions.

Finally, the mid-term project review meeting was held in November, hosted by the Institute of Nuclear Sciences and Technology in Vietnam. The implementation result and progress of the project were reviewed, and its plans were refined for the remainder of the programme. It was evaluated that the project has been well underway and produced significant amounts of meaningful data.



RTC on the Fundamentals of Using Nuclear Techniques for Verifying Food Authenticity (Part II), September, China



Mid-term Project Review Meeting, November, Vietnam

<b>RAS5084</b>	<b>Assessing and Improving Soil and Water Quality to Minimize Land Degradation and Enhance Crop Productivity Using Nuclear Techniques</b>
<b>Objective</b>	<b>To enhance the capacity of countries in the Asia-Pacific region to use nuclear techniques to assess and improve soil and water quality, and to implement best agricultural practices to minimize land degradation and enhance crop productivity</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Training Course</b>	RTC on the Application of Stable Isotopes for Soil and Water Quality Investigations	To train the participants in the use of stable isotope and related techniques for assessment of soil and water quality and to address agro-ecosystem problems	25-29 Mar.	China
<b>Expert</b>	Expert Mission	To provide technical assistance for soil and water quality study in Mongolia using nuclear techniques	26-30 Aug.	Mongolia
<b>Expert</b>	Expert Mission	To assist experts in understanding and improving skills for using nuclear techniques to soil and water quality research and management	23-27 Sep.	Laos
<b>Expert</b>	Expert Mission	To quantify the sources and loads of nitrogen and phosphorus pollutants in surface water systems by using stable isotope fingerprint techniques – A case study in a small watershed	4-8 Nov.	China
<b>Expert</b>	Expert Mission	To train experts on assessing and improving soil and water quality to minimize land degradation and enhance crop productivity using nuclear techniques	11-15 Nov.	Sri Lanka
<b>Meeting</b>	Mid-term Coordination Meeting	To review and assess the progress of project implementation, discuss and update work plan, agree on measures that need to be taken to ensure the project will achieve the objective set out	2-6 Dec.	Japan
<b>Expert</b>	Expert Mission	To train experts on soil and water sampling strategy, FRNs and isotope analysis, calculation and data processing	2-6 Dec.	Malaysia



## Project highlights for 2019

The project began its second year with the third regional training course in March in China, which provided the participants with practical training on the use of stable isotope techniques to monitor the sources and transport of non-point source pollutants, such as fertilizers, in agro-ecosystems. It included field visits to where demonstrations of site selections, water and soil sampling techniques conducted as well as laboratory demonstrations of isotope analysis.

Building on the RTCs held in past two years, five expert missions were conducted to Mongolia, Laos, China, Sri Lanka and Malaysia. Several GPs applied the techniques learned through the previous RTCs and conducted expert missions to their national projects. Some countries also have initiated close collaborations with their national institutions, most notably Pakistan, Viet Nam, Thailand, China and New Zealand.

Finally, the mid-term project coordination meeting was held in December in Japan, attended by 18 National Project Coordinators and experts from the IAEA, in which they discussed the project progress to date at national and regional levels as well as planned and refined the national and regional project work plans for the remaining years.



RTC on the Application of Stable Isotopes for Soil and Water Quality Investigations, March, China



Mid-term Coordination Meeting, March, China

## ➤ Human Health

<b>RAS6085</b>	<b>Enhancing Stereotactic Body Radiation Therapy for Frequent Cancers in the RCA Region</b>
<b>Objective</b>	<b>To improve clinical outcomes in cancer patients treated with Stereotactic Body Radiation Therapy (SBRT)</b>

## Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Training Course</b>	RTC on Advanced Radiotherapy Techniques (including IMRT,	To provide training for safe and effective implementation of advance radiotherapy techniques (from IMRT to SBRT)	18-22 Feb.	Japan

	IGRT, SRS and SBRT)			
<b>Training Course</b>	RTC on Stereotactic Body Radiation Therapy for Spine and Prostate Carcinomas	To train the participants in the application of stereotactic body radiation therapy for spine and prostate carcinomas	12-16 Mar.	Philippines
<b>Meeting</b>	Final Progress Review Meeting	To review the implementation of the project, assess the results of the project, analyse and identify the strength, weakness, and lessons learned over the life cycle of the project, identify future needs of the region, and agree on follow-up cooperative plan to ensure the sustainability of the results gained from the project	4-8 Nov.	Myanmar
<b>Expert</b>	Expert Mission	To give lectures on medical physics and to provide consultation on the application of SBRT	17-20 Dec.	Vietnam

### Project highlights for 2019

In the final year of this 4-year project, two regional training courses in Japan and the Philippines, one expert mission to Vietnam were conducted.

At the final progress review meeting held in November in Myanmar, it was concluded that the project had been successful and achieved its objective based on the country reports and discussions – a total of 187 professionals, including 87 radiation oncologists, 84 medical physicists and 16 radiotherapy technologists were trained through training courses; expert missions to Mongolia helped install and run the first linac in the country; expert missions to Vietnam successfully enhanced the applications of SBRT and supported implementation of SBRT protocols for lung and liver cancers in the country. It was also agreed during the meeting that the participating GPs will carry on their cooperation and maintain the objective of promoting and strengthening the use of SBRT in the region through the Regional Training Hubs even after the termination of the project.



RTC on Stereotactic Body Radiation Therapy for Spine and Prostate Carcinomas, March, Philippines



Expert Mission, December, Vietnam

<b>RAS6086</b>	<b>Strengthening Cancer Management Programmes in Government Parties through Collaboration with National and Regional Radiation Oncology Societies</b>
<b>Objective</b>	<b>To improve the cancer management of RCA States Parties by training radiation oncology professionals in collaboration with RCA and Asia Pacific national/regional radiation oncology societies</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Expert</b>	Expert Mission	To train experts on paediatric radiotherapy	2-6 Sep.	Indonesia
<b>Expert</b>	Expert Mission	To train experts on Intensity-modulated Radiotherapy (IMRT) in head and neck cancer	2-6 Sep.	Myanmar
<b>Meeting</b>	TC Sponsored Participation	IAEA/RCA sponsored participation on scientific forum	17-18 Sep.	India
<b>Expert</b>	Expert Mission	To train experts on national image-guided brachytherapy along with a workshop on gynaecologic malignancy	17-19 Oct.	Thailand
<b>Expert</b>	Expert Mission	To train experts on Intensity-modulated Radiotherapy (IMRT) in head and neck cancer	21-25 Oct.	Bangladesh
<b>Expert</b>	Expert Mission	To teach experts in an NTC on radiotherapy techniques using IMRT	21-25 Oct.	Vietnam
<b>Training Course</b>	RTC on Multidisciplinary Management and Modern RT Techniques for Head and Neck Cancers	To enhance head and neck cancer treatment in the RCA region	11-15 Nov.	China
<b>Expert</b>	Expert Mission	To train experts on advanced radiotherapy techniques in the management of head and neck cancers	18-22 Nov.	Pakistan
<b>Meeting</b>	Mid-term Coordination Meeting	To review and assess the progress of project implementation, discuss and update work plan, agree on measures that need to be taken to ensure the project will achieve the objective set out	2-6 Dec.	Japan



## Project highlights for 2019

The second regional training course on strengthening multidisciplinary management and modern RT techniques for head and neck cancers was held in November in China and was attended by 32 participants from 16 countries. It was held in conjunction with the meeting of Federation of Asian Organisations for Radiation Oncology (FAR) in purpose of promoting sustainable strengthening cancer management.

The mid-term coordination meeting was also held successfully in December in Japan. 26 experts from 18 GPs and the IAEA participated in the event to review and outline the plan and activities of the projects.

In addition, national training courses were well conducted as planned in 10 GPs and trained more than 1,600 participants in advanced radiotherapy techniques for advanced cancer management.



Mid-term Coordination Meeting, December, Japan

<b>RAS6087</b>	<b>Enhancing Medical Physics Services to Develop Government Parties through Regional Leadership in Standards and Education and Training Support</b>
<b>Objective</b>	<b>To improve health care to patients in the region through the application of appropriate, effective and safe radiation medicine, utilizing competent medical physicists, consistent with IAEA requirements and guidelines</b>

## Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	TC Sponsored Participation	TC sponsored participation to IAEA World Cancer Day	1 Feb.	Austria
<b>Meeting</b>	TC Meeting to Review of AMPLE E-learning Resource	To review the implementation and uptake of the IAEA AMPLE e-learning resources for medical physics clinical training and provide recommendations for improvements and strengthening of AMPLE	20-24 May	Austria

<b>Expert</b>	Expert Mission	To conduct final assessment of medical physics residents	26-30 Jun.	Indonesia
<b>Meeting</b>	Meeting on Drafting the Assessment Guidelines for Clinical Training in Medical Physics	To review a draft assessment guideline for clinical training in medical physics	8-12 Jul.	Australia
<b>Expert</b>	Home-based Assignment	To review, integrate and finalize the assessment guideline for clinical training for medical physicists	8-19 Jul.	Australia
<b>Expert</b>	Expert Mission	To support final examinations in medical physics	9-11 Oct.	Bangladesh
<b>Meeting</b>	Mid-term Project Review Meeting	To review and assess the progress of project implementation, discuss and update work plan, agree on measures that need to be taken to ensure the project will achieve the objective set out	14-18 Oct.	Japan
<b>Expert</b>	Home-based Assignment	For international coordination of medical physics clinical training pilots	11-15 Nov.	Australia
<b>Expert</b>	Home-based Assignment	For AMPLE learning management system for medical physics clinical training	18-22 Nov.	Australia

### Project highlights for 2019

Initiated in 2018, the project has carried on activities that could contribute to improving medical physics capability and capacity of the GPs through enhanced access to education and training. In 2019, A meeting on AMPLE E-learning Resource was held in May in Austria, in which agreement on improvements to the LMS platform for medical physics, AMPLE, and its implementation was identified. Expert missions and national training programs were conducted with a final assessment for the radiation therapy medical physicists in June in Indonesia.

The mid-term project review meeting was also held in October in Japan. At the meeting, the reports presented by each participating GP showed medical physics training strengthened through the project.



Mid-term Project Review Meeting, October, Japan

<b>RAS6093</b>	<b>Strengthening Capacity to Manage Non-Communicable Diseases Using Imaging Modalities in Radiology and Nuclear Medicine</b>
<b>Objective</b>	<b>To implement better management and control of non-communicable diseases (NCDs) in the RCA region in line with UN SDGs and WHO Global Action Plan for the Prevention and Control of NCDs 2013-2020</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	First Project Coordination Meeting	To review current status of participating countries, set up the project baseline from which the project success can be measured, discuss and agree on project work plan for 2019-2020	22-26 Apr.	Korea
<b>Training Course</b>	RTC on Diagnosis and Treatment of NCDs for Radiologists and Nuclear Medicine Physicians	To update participants on hybrid imaging modalities used in NCDs with focus on cancer management	22-26 Jul.	Vietnam

### Project highlights for 2019

This project was initiated with the aim to enhance the GPs' capacity to manage non-communicable diseases focused on cancers in alignment with the UN Sustainable Development Goals and the WHO Global Action Plan for the Prevention and Controls of the diseases.

In its first year, the first project coordination meeting was held in March in Korea in which the participating GPs presented on their national status and discussed the work plan for the TC Cycle of 2019-2020.

The first regional training course was held in July in Vietnam for radiologists and nuclear medicine physicians to update them with modern hybrid imaging modalities used to treat cancers.

➤ **Environment**

<b>RAS7028</b>	<b>Enhancing Regional Capabilities for Marine Radioactivity Monitoring and Assessment of the Potential Impact of Radioactive Releases from Nuclear Facilities in Asia-Pacific Marine Ecosystems</b>
<b>Objective</b>	<b>To improve the integrated regional quality-assured capabilities for marine radioactivity monitoring and for impact assessment of routine and accidental releases of radioactivity into the marine environment</b>

**Project Activities in 2019**

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	Regional Workshop on Marine Environments Monitoring Guidelines	To review draft and finalise guidelines for regional coordinated marine radioactivity monitoring	4-8 Mar.	Indonesia
<b>Meeting</b>	Workshop on Implementation of Quality Management Systems in Radioanalytical Laboratories involved in Marine Radioactivity Studies	To review QMS implementation in project counterpart laboratories and issuance of recommendations for future improvements	29 Apr. - 3 May	Malaysia
<b>Training Course</b>	RTC on Gamma-Ray Spectrometry	To improve knowledge and practical skills of advanced gamma-ray spectrometry and support regional harmonization for this most widely used analytical technique	26 Aug. - 6 Sep.	Australia
<b>Meeting</b>	TC Sponsored Participation	TC sponsored participation on the 9 <sup>th</sup> International Symposium on Naturally Occurring Radioactive Material	23-27 Sep.	USA
<b>Meeting</b>	TC Sponsored Participation	TC Sponsored Participation for the 16th Coordination Meeting of the ALMERA Network of Analytical Laboratories for the Measurement of Environmental Radioactivity	16-18 Oct.	Switzerland
<b>Training Course</b>	RTC on Dose Assessment and Risk Analysis Modelling	To provide training in radiological dose assessment and risk analysis related to potential releases of radionuclides to the marine environment	28 Oct. - 1 Nov.	China

## Project highlights for 2019

The project initiated its year with the regional workshop held in March in Indonesia in which the guidelines for regional coordinated marine radioactivity monitoring were reviewed and finalized with the aim to provide substantial protocols for gathering environmental samples and analysing them. Another workshop was held in Malaysia on the implementation of quality management system (QMS) to review the QMS implementation status in the participating GPs' laboratories and issuance of recommendations for the future improvement.

In addition, a regional training course on Gamma-ray Spectrometry was held for two weeks in Australia in which the participants could gain theoretical knowledge and practical skills in advanced gamma-ray spectrometry measurements in the marine environment. Another regional training course was conducted in October in China on radiological dose assessment and risk analysis related to potential release of radionuclides to the marine environment. The participants were introduced to and trained in theoretical and hands on aspects of dose assessment and model software during the event.



WS on Marine Environments Monitoring Guidelines, March, Indonesia



RTC on Gamma-Ray Spectrometry, August, Australia

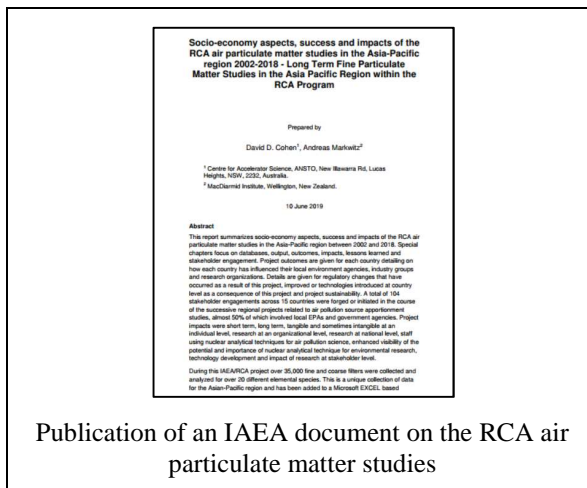
<b>RAS7029</b>	<b>Assessing the Impact of Urban Air Particulate Matter on Air Quality</b>
<b>Objective</b>	<b>To enhance capacity using Nuclear Analytical Techniques in assessing the impact of fine particulate matter on human health, visibility and historic monuments</b>

## Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Expert</b>	Home-based Assignment	To draft an IAEA document on the scientific activities, procedures, protocols, databases and results of air particulate matter studies in the Asia-Pacific region within the RCA	15 May - 15 Jun.	Australia

## Project highlights for 2019

An IAEA document on socio-economy aspects, success and impacts of the RCA air particulate matter studies in the Asia-Pacific region between 2002 and 2018 was drafted. Prepared by experts from AUL and NZE, the document included project outcomes, impacts and stakeholder engagement as well as details of regulatory changes, improved or technologies introduced at country level as a consequence of the project and project sustainability.



Publication of an IAEA document on the RCA air particulate matter studies

<b>RAS7030</b>	<b>Assessing Deep Groundwater Resources for Sustainable Management through the Utilization of Isotopic Techniques</b>
<b>Objective</b>	<b>To improve the capability for efficient and effective planning for sustainable management of deeper groundwater resources</b>

## Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Training Course</b>	RTC on Isotopic Data Processing and Interpretation – Hands on Exercises	To train the participants on processing and interpretation of isotopic data obtained from the RAS project	18-22 Mar.	Japan
<b>Expert</b>	Expert Mission	To review and guide national project	17-21 Jun.	Philippines
<b>Meeting</b>	Final Project Assessment Meeting	To review the implementation of the project, assess the results of the project, analyse and identify the strength, weakness, and lessons learned over the life cycle of the project, identify future needs of the region, and agree on follow-up cooperative plan to ensure the sustainability of the results gained from the project	23-27 Sep.	Mongolia



### Project highlights for 2019

The year 2019 was the final year of this project. A regional training course on isotopic data processing and interpretation was held in March in Japan to provide the participants with sustainable training in application of isotopic techniques in deeper groundwater resources investigation as well as in groundwater modelling and quality issues.

As the final activity of the project, the final project assessment meeting was held in September in Mongolia. The contributions that this project had made to the improvement of the water quality in the region, such as the development of isotope, hydrogeological, chemical database and groundwater model and their dissemination to the end-users; demarcation of deep ground water zones in good quality with high replenishment rate; and facilitation of collaboration among decision makers and stakeholders were highly appreciated.



RTC on Isotopic Data Processing and Interpretation – Hands on Exercises, March, Japan



RTC on Isotopic Data Processing and Interpretation – Hands on Exercises, March, Japan

<b>RAS7031</b>	<b>Assessing the Vulnerability of Coastal Landscapes and Ecosystems to Sea-Level Rise and Climate Change</b>
<b>Objective</b>	<b>Improve capacity of coastal countries in the Asia-Pacific region to use radiometric and isotopic techniques to ascertain coastal vulnerability and resilience to climate change in the 21st century</b>

### Project Activities in 2019

<b>Event</b>	<b>Title</b>	<b>Summary of Purpose</b>	<b>Dates</b>	<b>Host Country</b>
<b>Meeting</b>	First Coordination Meeting	To review the current status of participating countries, set up the project baseline from which the project success can be measured, discuss and agree on project work plan for 2019-2020	25 Feb. - 1 Mar.	Malaysia

<b>Training Course</b>	RTC on the Use of Isotopic Techniques in Assessing Coastal Geomorphic Change	To train the participants in the use of radiometric and isotopic skills including collection and preparation of samples, use of radiometric and isotopic techniques, and data analysis and interpretation of results	2-6 Dec.	Australia
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**Project highlights for 2019**

The project was initiated by the kick-off meeting held in February in Malaysia. Experts from 16 participating GPs gathered at the event to document national activities that could contribute to the project objectives, identify knowledge gaps, facilitate the development of collaborative arrangements and plan regional activities. During the meeting, the target locations were decided based on their international trade significance and vulnerability to the impacts of erosion and flooding associated with sea-level rise.

In addition, the first training course on the use of isotopic techniques in assessing coastal geomorphic change was conducted in December in Australia to provide training on sample preparation and basic sediment analysis, gamma spectrometry, laser particle size analysis and so on. The attendees from 11 GPs also experienced field activities at the Homebush Bay wetlands including measurements of substrate surface elevation change and sediment coring.



First Coordination Meeting, February, Malaysia



RTC on the Use of Isotopic Techniques in Assessing Coastal Geomorphic Change, December, Australia