

Public Version



REGIONAL COOPERATIVE AGREEMENT

ANNUAL REPORT 2015

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SECTION 1 - OVERVIEW OF THE RCA PROGRAMME IN 2015

1. Programme Summary 2015

There were 19 active projects in 2015, which included 15 projects from the previous cycle and 4 new projects with first year of implementation in 2015. Detailed information on all active projects is available on the IAEA web-based platform Programme Cycle Management Framework (PCMF) and basic information may be found on the RCA Website (www.rcaro.org).

During the years 2012 – 2015, the RCA projects were managed by different Programme Management Officers (PMOs) in the Division for Asia and the Pacific rather than by the RCA Focal Person (RCAFP) only as in past practice.

As of January 2016, almost all RCA projects have been reallocated to the RCAFP as PMO, with the exception of two projects, RAS1020 and RAS6076 which remain with Mr Gashaw Wolde and Mr Ho-seung Lee as PMOs, respectively.

The RCA FP continues to be responsible for the overall coordination of the RCA programme. For effective project implementation, it is important that Lead Country Coordinators (LCCs) and National Project Coordinators (NPCs) maintain continuous contact with their respective PMOs and coordinate closely on any issues that may arise.

List of RCA projects is shown in Annex 1

In 2015, fifteen (15) regional training courses (RTCs) were held with twenty nine (29) experts recruited as lecturers, among whom thirteen (13) were from the region. Three hundred and sixty (360) persons were trained in these training courses. Twenty four (24) meetings were held in 2015. These included project progress and final review meetings, project planning meetings, and technical meetings. A total of three hundred and ninety six (396) participants, including five (5) participants from non-RCA GPs, and twenty two (22) external experts participated in these meetings. In addition to these project-related meetings, two policy level meetings were conducted, namely the Regional Meeting of National RCA Representatives and the RCA General Conference Meeting.

In addition, in 2015, thirteen (13) expert missions were conducted by thirty-six (36) experts, which provided necessary technical assistance to some GPs for their effective participation in RCA projects. The total duration of the missions was one hundred and eighteen (118) working days, and from the thirty six (36) experts recruited, twenty eight (28) were from the RCA GPs. Nineteen (19) home-based assignments were implemented with a total duration of two-hundred and ninety (290) days. Apart from six (6) home-based assignments, all of these assignments were carried out by experts from the RCA GPs.

2. Management and Implementation of the RCA Programme in 2015

2.1 Summary of Financial and In-Kind Contributions

The budget allotment from the TC Fund for 2015 was €1.42 million. The encumbrances and actuals in 2015 was €1.26 million at an Implementation Rate of about 88.8 %.

The RCA GPs are encouraged to provide extra-budgetary contributions to the RCA programme as a means of contributing to the overall performance/implementation of the RCA programme and demonstrating the ownership of the programme. The initial projects and activities for which extra-budgetary funding is required is marked as footnote/ain the PCMF. Some GPs have utilized their reserve funds for this purpose. The National RCA Representatives (NRs) are requested to indicate the specific purposes for which their contributions are made when they provide the funding. The IAEA Secretariat could provide assistance in identifying the projects and related activities with financial requirements, if necessary. The total of the extra-budgetary contributions received in 2015 was €458,478.

Complementary implementation inputs in the form of “In-kind” contributions provided by the RCA GPs enhance the range, depth and sustainability of the RCA projects. “In-kind” contributions have been recognised since the RCA Agreement commenced in 1972 and the term is referred to in the 1987 RCA Agreement as well as the RCA Guidelines and Operating Rules (GORs). In line with TC practice, "In-kind" contributions are understood as cost-free goods and/or services provided by Party A (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 will 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 €3,015,246 in 2015.

2.2 Regional Events

The implementation of the RCA activities focused mainly on regional training courses and regional 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 2015, eighteen (18) 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. This will be considered in the planning for the project implementation in 2016.

Indicative plan for RCA regional events in 2016 is given in Annex 2

2.3 Progress Monitoring

Progress monitoring of the projects under implementation was undertaken through the biannual Progress Reports of the NPCs and the consolidated Project Progress Assessment Reports (PPAR) submitted by the LCCs. In addition, project progress reviews were conducted at the 37th Meeting of the National RCA Representatives and the 44th RCA General Conference Meeting. These mechanisms have proved to be useful in the monitoring of projects and identification of challenges in project implementation, and will be continued.

2.4 Challenges in Implementation

Late and/or incomplete submissions and/or submission of nominations of candidates who are not members of the National Project Teams continue to be an issue. The cooperation of RCA NRs is sought to ensure that the persons nominated for regional events are those who are actively involved in the project implementation, are members of the National Project Teams, and have the required qualifications. RCA NRs are encouraged to consult and coordinate with their designated NPCs on the role and responsibility of the NPC in the identification of qualified candidates and the timely submission of nominations through the RCA NRs.

The IAEA/TC also encourages RCA NRs to make use of the In-Touch platform to facilitate the submission of nominations. Feedback from the GPs that have used the platform indicates that it is a convenient tool. Moreover, the submission of hand filled nomination forms has repeatedly caused delays and errors in implementation.

The record also shows that the submission of the PPAR from the NPCs to the LCCs for some projects is either irregular and/or incomplete or none. This is a crucial matter and several LCCs have raised their concerns regarding lack of submission of national reports from NPCs and consequently the inability to submit the project PPAR as required. The non-compliance might be due to the lack of knowledge and/or understanding of the requirements. The RCA NRs are requested to monitor and ensure timely submission of the progress reports by their NPCs of all active projects to the designated LCCs prior to the IAEA deadline of mid-July and mid-January each year. RCA NRs are also encouraged to share the RCA Guidelines and Operating Rules (GORs) with their NPCs.

3. Summary of the RCA Regional Office (RCARO) Activities related to Promotional and other Non-technical Activities in 2015

The RCARO continued its efforts in 2015 to publicize the activities of the RCA and establish collaborations with other regional organizations with common interests.

The activities of the RCA were publicized through the publication of the RCA Success Stories, the RCA information service on the RCA website, participation in various relevant regional/international conferences and RCA expert support programmes. The RCARO also carried out the RCA/UNDP partnership project on electron beam applications and initiated a pilot project on enhancing patient care and capacity of nuclear medicine programmes in the RCA GPs for the 2016-2017 RCA programme cycle.¹

- The RCARO is in the process of preparing the publication of the 6th batch of RCA Success Stories, one in industry and the other in the medical sector in cooperation with the LCCs of the respective RCA projects. The final version will be prepared and presented at the 38th NRM in 2016.
- The RCARO made an overall update of the RCA promotional video reflecting changes of NRs, new RCA GPs and RCA Projects. According to the recommendation of the 20th RCARO SAC, a three minute long video containing only core parts of the original version was also produced and the final full and short versions were uploaded to the RCA website and YouTube through the links below:

Full version: <https://www.youtube.com/watch?v=4bh5kWGKTzc>

Short version: <https://www.youtube.com/watch?v=peCWkR7vkAM>

¹ This project was implemented outside the framework of the RCA Agreement and strongly supported the RCA activities and enhanced regional partnership between the RCA and UNDP.

- Through expert meeting and consultation with the SAC, the RCARO established guidelines for the enhancement of the RCA information service; namely the designation of the RCA Website Administrators (RWA), efficient provision of RCA information by the IAEA and GPs and the publication of the RCA Annual Report for the general public. The RCARO received nominations of the RWAs from RCA GPs and is in the process of developing the RWA webpage.
- The RCARO participated in international conferences in radiation research (May, Japan) and NDT (November, Malaysia) and used the RCA brochure, Success Stories and promotional video for promotional purposes. The RCARO also supported the RCA promotional activities of Australia and New Zealand.
- The RCARO supported RCA experts from China, Indonesia, Australia and Sri Lanka for their RCA promotional activities at international conferences held in 2015.
- The RCARO, as the LCC, finalised the project documents for a pilot project entitled “Improving patient care and enhancing Government Parties capacity in nuclear medicine programs in RCA region” for the RCA Programme Cycle 2016-2017.
- According to the work plan of the RCA/UNDP partnership project on Electron Beam Applications, the RCARO held a Regional Training Course on Electron Beam Applications for Degradation of Environmental Pollutants in May, inviting 23 participants from 12 GPs, and the final review meeting in October for 21 participants. It is in the process of publishing a final report highlighting activities, outcomes and achievements of the project.²
- To assist the needs of the RCA GPs, the RCARO carried out the RCARO/KAIST Nuclear Engineering Master’s Degree Course, RCARO/ARCCNM Training Course and RCARO/KAERI regional training workshop.³
- The RCARO held the 2nd Working Group Meeting on RCARO’s Future Role on 20-22 January to discuss and identify specific criteria and mechanisms for the implementation of possible future role of the RCARO. With 20 participants, including members of the working group from Australia, China, Japan, New Zealand, Pakistan, the Philippines and Korea, the meeting discussed the implementation of Supplementary Projects (SP), Research Projects (RP) and Training Projects (TP) and funding model and resources as well as the revision of RCARO mandate and action plans.

RCARO actions related to promotional and other non-technical activities in 2015 are given in Annex 4

² This project was implemented outside the framework of the RCA Agreement and strongly supported the RCA activities and enhanced regional partnership between the RCA and UNDP.

³ This cooperation was implemented outside the framework of the RCA Agreement and supported the RCA activities and strengthened the partnership between RCA, KAIST and KAERI.

SECTION 2 - DETAILS OF THE TECHNICAL PROGRAMME IN 2015

- **Others**

RAS0068	Enhancing the Management of the Regional Agreement and Programme
Objective	To enhance the regional ownership of the RCA programme through support for RCA management and coordination activities

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	2 nd Working Group Meeting on the RCARO's Future Role	Discuss and identify specific criteria and mechanisms for the application and implementation of Supplementary Projects, Research Projects and Training Projects, and discuss the future role of the RCARO	20-21 Jan.	Korea
Meeting	2 nd Meeting of the Working Group on Proposed Amendments to the RCA Agreement	Discuss proposed amendments to the RCA Agreement	12-13 Feb.	Australia
Meeting	Expert Group Review on RCA Medium Term Strategy (MTS) and Strategic Priorities	Define future strategic trends, directions and strategic priorities for the period 2018-2023, and develop the draft MTS 2018-2023	16-20 Feb.	Austria
Meeting	3 rd Meeting of RCA Programme Advisory Committee (PAC)	Review Agency feedback on technical assessment of the draft RCA projects 2014-15; finalise the background paper on the advantages and disadvantages of a four year project cycle; and develop recommendations on the reporting of RCA GPs' "In-kind" contributions to the RCA programme	13 Mar.	Korea
Expert	Home-based assignment	Review the design and implementation of the training component of all the completed RCA projects implemented to-date	22 May - 20 Jun.	Australia
Expert	Home-based assignment	Develop the first draft RCA MTS 2018-2023 in service of the Working Group Meeting on MTS	8-12 Jun.	Austria
Meeting	Working Group Meeting on	Provide recommendations in the formulation of the RCA	22-26 Jun.	Austria

	MTS&SP	MTS2018-2023 and strategic priorities for 2018-2023		
Meeting	3 rd Working Group Meeting on Amendment of RCA Agreement	Discuss proposed amendments to the RCA Agreement	23-24 Jul.	India
Expert	Expert Mission on RCA Meeting for Preparatory work for the 44 th RCA GCM	Facilitate and support the preparatory work of the 44 th GCM and deliver presentations in the meeting	7-11 Sep.	Austria

Project highlights for 2015

The project enabled the implementation of several Working Group Meetings and home-based assignments aimed at enhancing the RCA programme and developing and advancing the RCA's operational and management mechanisms. The WG on the amendment of the RCA Agreement agreed on the content of a revised Agreement and prepared a final report on the proposed amendments on the RCA Agreement for final endorsement of the RCA GPs. The WG meeting on the RCA MTS&SP 2018-2023 produced a final draft RCA MTS 2018-2023 that was endorsed by the RCA GPs for execution. The WG on the future role of the RCARO established mechanisms to implement the RCARO initiated projects such as Supplementary Projects, Research Projects and Training Projects. The RCA Programme Advisory Committee conducted a meeting to discuss the development of the RCA Programme for 2018-19 and identify lessons learnt from past cycles.

▪ Industry

RAS1014	Supporting Radiation Processing for the Development of Advanced Grafted Materials for Industrial Applications and Environmental Preservation
Objective	To produce advanced grafted products for industrial applications and for mitigating environmental pollution by using radiation processing

Project Activities in 2015

Event	Title	Summary of Purpose and Achievements	Dates	Host Country
Training Course	Regional Training Course on Advanced Characterization Methods of Grafted Polymeric Matrices	Provide theoretical and practical training on characterization methods of grafted polymeric matrices; discuss the utilization of radiation grafting technology in industrial and environmental applications; demonstrate the grafting techniques and characterization of the products	9-13 Feb.	Malaysia
Training Course	Regional Training Course on Application and Up Scaling of Radiation	Provide practical training on the process development and simulation of technical consultation for up-scaling of	13-17 Apr.	China

	Grafting for Environmental and Industrial Applications	radiation grafting		
Meeting	Regional Executive Meeting for policy makers and end-user on radiation grafting	Provide information on advantages of radiation-induced graft polymerization and its industrial applications to end-users and policy makers for the possibility of their commercialization	7-11 Sep.	Japan
Meeting	Final Project Assessment Meeting	Review and evaluate the progress and achievement of the project and discuss follow-up activities for sustainability	30 Nov. - 4 Dec.	Thailand

Project highlights for 2015

The project has successfully completed its objectives, and has been extended until the end of 2016. Project outputs include approximately fifty (50) advanced radiation grafted materials developed in various categories namely: (1) adsorbents (2) ion exchange membranes (3) catalysts (4) bioactive carriers (5) tissue scaffold (6) evaporator membranes and (7) active packaging. Two of these products, Caesium adsorbents for water purification and adsorbent for silicon wafer cleaning waste, have already been commercialized, and two are at the pre-commercialization stage. Other developed products are at different stages of upscaling. More than 100 participants were trained through the support of host GPs, regional and international experts.

RAS1020	Building Capacity for Applications of Advanced Non-Destructive Evaluation Technologies for Enhancing Industrial Productivity
Objective	To develop a pool of trained technologists and technology practitioners in industrial digital radiography (DR) and computed tomography (CT) for applications in metal casting, rubber and plastic moulding, industrial prototyping, reverse engineering and routine non-destructive examination (NDE) of industrial components in the RCA region; to impart specialised training to key stakeholder members, who will in turn act as catalysts in their respective countries for technology propagation, and to provide for productivity enhancement in the industrial quality assurance (QA) processes through process automation

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Home-Based Assignment	Prepare protocol and manual/guidebook for gamma/X-ray industrial tomography for use by Member States	4-29 May	India
Training Course	Regional Training Course on DIR and industrial CT for	Train professionals in the area of conventional or advanced radiographic techniques	25 May - 5 Jun.	Malaysia

	trainers			
Training Course	Regional Training Course on applications of DR and CT to metal, non-metal and composite materials	Train professionals in the area of conventional or advanced non-film-based imaging techniques for their application to environmentally friendly radiation-based NDE technologies	26-30 Jul.	Bangladesh
Expert	Expert group consultancy	Deliberate on development of computed tomography for industrial applications	16-20Nov.	Indonesia

Project highlights for 2015

The project RAS1020 contributed to the enhancement of national infrastructures and capability in GPs through increased manpower training and technological and administrative awareness for applications of advanced nuclear/radiation-based digital industrial radiography (DIR) and computed tomography (CT) technologies.

RAS5055	Improving Soil Fertility, Land Productivity and Land Degradation Mitigation
Objective	To assist Member States in the development and effective implementation of area-wide precision conservation to control the impact of land-use practices on land degradation through enhancing capacities in nuclear and isotopic techniques

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Home-based assignment	Focus on modelling of Compound-Specific Stable Isotope (CSSI) and Fallout Radionuclide data collected from 13 GPs under the project, and interpret them to calculate sediments deposition rate and identify erosion hot spot in a catchment area	23 Feb. - 6 Mar.	New Zealand
Conference	Side event at the UNCCD 3 rd Scientific Conference on combating desertification, land degradation and drought for poverty reduction and sustainable development	Present key results and successes of the project at the UNCCD 3 rd Scientific Conference on combating desertification, land degradation and drought for poverty reduction and sustainable development	9-12 Mar.	Mexico

Training Course	Regional Training course on integrated soil conservation practices to mitigate soil erosion and the role of nuclear techniques	Facilitate the regional training course as well as to present IAEA perspective on measuring soil erosion, identifying hot spots and putting soil conservation practices to reduce soil erosion in place.	27-31 Jul.	Sri Lanka
Meeting	Regional Workshop on Demonstration of the Role of Nuclear Techniques in Conservation Agriculture	Provide training on the benefits of using nuclear techniques in measuring and identifying soil erosion rates and applying associated conservation measures to reduce land losses	1-2 Nov.	Viet Nam
Meeting	Final Project Review Meeting	Review project progress, achieved outputs and lessons learnt, and develop strategies for dissemination of information to land users, stakeholders and decision makers on measuring soil erosion using nuclear techniques and on mitigation measures to reduce soil erosion for sustainable land use	4-7 Nov.	Malaysia
Expert	Two home-based assignments	Produce a document "Assessment of soil management practices for mitigating land degradation, using nuclear techniques" for further development into an IAEA TECDOC	7-18 Dec.	Pakistan, Australia

Project highlights for 2015

In 2015, the project RAS5055 supported the RCA GPs in the use of fallout radionuclide/compound specific stable isotope (FRN/CSSI) techniques for soil erosion control. The role of these nuclear techniques was revealed in a regional training course on integrated soil conservation practices to mitigate soil erosion. Furthermore, it was also demonstrated to decision-makers and key stakeholders at a dedicated event in relation to conservation agriculture. Collected FRN/CSSI data was analysed to help GPs interpret and understand the extent of soil erosion and identify its source. A 30 to 50 percent soil erosion reduction in the Asian region was achieved with FRN/CSSI techniques on board, which was picked by FAO as a success story for promotion among the UN Member States and was published in 2015 in: (a) the National Geographic, a rare reference of global distribution; (b) a 160 page fundamental FAO publication on mountain soil; and (c) reported as a climate change fighting measure under the UN Convention to Combat Desertification.

- **Agriculture**

RAS5056	Supporting Mutation Breeding Approaches to Develop New Crop Varieties Adaptable to Climate Change
Objective	To enhance people's livelihood through the improvement of crop productivity and food security through the application of mutation technique and other nuclear and isotopic techniques under the driver of climate change and variability

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	RCA expert in the FNCA Workshop (WS) on Mutation Breeding in Malaysia	Attend FNCA Workshop (WS) on Mutation Breeding in Malaysia	27-30 Jan.	Malaysia
Expert	Home-Based Assignment	Development of Oceania Association of Plant Mutagenesis (AOAPM) website for functional URL	26 Oct. -13 Nov.	China
Meeting	Final Project Assessment Meeting	Review project outcome including activities, implementation strategies and scientific methodologies used to enhance national capacity for the application of isotopic and nuclear techniques for increasing crop productivity	17-20 Nov.	Myanmar

Project highlights for 2015

Significant achievements have been made through the active participation of the participating GPs, and their involvement in the group activities and diligence in the work done in their respective home institutions. These achievements include new mutant crop varieties identified and tested for productivity, resource use efficiencies and tolerance to abiotic stress under large field demonstration and/or commercialization across the region. Altogether, 28 mutant varieties were developed and officially released, as well as 351 advanced mutant lines developed and a total of 4,360 mutant lines (M4 onwards) in advanced stage were identified. Furthermore, 27,912 mutant lines (M3 generation) were isolated and 117 M2 populations and 88 F2 populations using mutants were also developed from different countries in various crops. A web-page with a functional URL including contents of Asian and Ocean Association of Plant Mutagenesis (AOAPM) was preliminarily established. The final review meeting was held and the project was successfully completed.

RAS5070	Developing Bioenergy Crops to Optimize Marginal Land Productivity through Mutation Breeding and Related Techniques
Objective	To cultivate improved varieties of bioenergy crops on marginal lands

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	Workshop on Mutation Breeding and Supportive Techniques for Development of Bioenergy Crops	Report and discuss the current status of bioenergy crops and their development in the region; share knowledge and experience of bioenergy crop research and development; review and discuss the applied methodologies used in plant mutation; identify the specific and common needs of the countries in the region which can be addressed under this project; develop a strategy to upgrade the national capability, skills and infrastructure, strengthening the network of cooperation	23-27 Mar.	Austria
Training Course	Regional Training Course on the Application of Mutation Breeding and Screening of Target Traits in Bioenergy Crops	Provide participants with theoretical and practical information on mutation induction, mutation breeding and related biotechnologies, screening of target traits for bioenergy crops	24-28 Aug.	China
Expert	Expert mission	Promote the collaboration between RCA and FNCA on Mutation Breeding	31 Aug.- 3 Sep.	Mongolia

Project highlights for 2015

The year 2015 is the first year of the implementation of the project RAS5070. Main results include the finalization of national work plans of the participating GPs and the implementation of early activities. Each country has identified the most suitable/appropriate crops for cultivation in marginal lands of their country, and 27 persons were trained on the application of mutation breeding and screening of target traits in bioenergy crops. More training courses will be implemented in 2016 to enhance national capacity and capability in this area.

RAS5071	Strengthening Adaptive Climate Change Strategies for Food Security through the Use of Food Irradiation
Objective	To strengthen adaptive climate change strategies for food security through increased awareness and utilization of food irradiation

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	First Coordination Meeting	Define the project implementation and monitoring strategy; set the project baseline for measuring results; agree on the expected results with their corresponding performance indicators; establish project work plan with detailed activities, inputs, timelines, budget and roles and responsibilities	16-20 Mar.	Thailand
Expert	Expert Mission	Present key activities and objectives of the project in the uses of irradiated food in case of natural disasters at the international symposium on the Impact of Extreme Atmospheric Events on Geo-Surface in a Changing Climate, and present the importance of food irradiation technology in coping with natural calamities	14-15 May	Sri Lanka
Meeting	Regional Workshop on Strategy for Development and Dissemination of Information Material for Regional Stakeholders	Inform relevant organizations in food security and safety policies; provide guidance on future programs of organizations involved in research on food irradiation; review and finalize a video clip introducing the possible use of irradiation to mitigate food safety and security issues due to climate change; create an e-brochure on the possible use of irradiation to mitigate food safety and security issues; design a strategy for the information of regional stakeholders on the possible use of irradiation to mitigate food safety issues due to climate change	16-20 Nov.	Viet Nam

Project highlights for 2015

Two valuable sources of information were enhanced and developed by the project participants for the use of RCA GPs to increase the awareness of policy makers regarding the potential benefits of food irradiation and to strengthen the adaptive climate change strategies towards improving food security: (i) an enhanced information video clip on the project now including a short introduction on the impact of climate change and the potential role of irradiation; and (ii) a Fact Sheet containing factual information about climate change and food irradiation and some frequently asked questions and answers about the technology based on existing reference materials and e-learning courses and facts about climate change. These materials will be finalized and transmitted by the FAO-IAEA to RCA GPs. Other highlights include an increased appreciation of RCA GPs on climate change issues and how food irradiation can address food insecurity, and the development of a survey questionnaire to be used in the national and regional seminars, which was drafted by the LCC (PHI) and commented on by NPCs from NZE and MAL. The NPCs have made great efforts in linking with the climate change groups to participate in the regional and national activities, which will further enhance the implementation of the project.

▪ Human Health

RAS6053	Improving Image Based Radiation Therapy for Common Cancers in the RCA Region
Objective	To improve radiation therapy practice in the RCA region by enhancing applications of evidence-based approaches and quality standards

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Training Course	Refresher Course on 3D Techniques in Simulation-Treatment in Radiotherapy	Provide an update to radiation therapy technologists for countries whose experience in 3D conformal radiotherapy is limited, presenting an overview of the most relevant aspects for safe and effective practice	3-8 Aug.	USA

Project highlights for 2015

Advances in computer technology have allowed the possibility of replacing the simulation, planning and treatment delivery of basic two-dimensional radiation therapy (radiotherapy in 2D) by a more sophisticated three-dimensional conformal radiotherapy approach in 3-dimensional Computer-Related Tomography (3D CRT). While 2D radiotherapy can be applied to equipment, infrastructure and simple training, transfer to the processing of 3D forming technology requires more resources, equipment, personnel and training. Radiation therapy technologists from countries whose experience in 3D conformal radiotherapy is limited were provided with theoretical and practical knowledge on how to improve the quality of radiotherapy in the region, so that they may be able to implement this technique in their clinical practice in an effective and safe manner, and gained familiarity with the technical aspects that must be considered to make the transition from 2D planned radiotherapy treatments to the modern 3D planned treatment delivery, thus enhancing

regional capabilities in the area of radiation oncology and improving image- based radiation techniques, as well as for the application of 3D CRT.

- http://www.rcaro.org/arp/articles/write/tableid/annual_rp

RAS6062	Supporting 3D Image-Guided Brachytherapy Services
Objective	To Improve regional and national capacities for effective brachytherapy services by implementing 3D image-guided brachytherapy (3D IGBT)

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Training Course	Regional Training Course on 3D Image-Guided Brachytherapy for Cervical Cancer (Advanced Course)	Provide radiation oncologists and medical physicists with a comprehensive understanding of the clinical and physics aspects of 3D IGBT of cervical cancer in order to enable safe and effective implementation or further development of a 3D IGBT program in their institutions	23-27 Mar.	Singapore
Meeting	Final Project Review Meeting	Review and evaluate the overall activities and progress, and plan for follow-up activities and future directions after the completion of the project	16-20 Nov.	Japan
Expert	Home-based Assignment	Development of training module for 3D Image-Guided Brachytherapy Services and the IAEA MOODLE Web platform	21 Dec. 2015-15 Feb. 2016	Austria

Project highlights for 2015

The year 2015 was the last year of this 4-year project. All the regional project activities were implemented as scheduled, and the objectives of the project components were achieved. In summary, a total of 114 professionals have been trained on 3D image-guided brachytherapy in the 4 RTCs implemented in this project. Subsequently, these participants have conducted a total of 24 National Training Courses/activities in their own countries with a participation of 1320 national participants (reported by the NPCs). During the life cycle of the project, the participating countries have reported that 53 institutions have newly implemented the 3D IGBT. This project has contributed greatly to the education and training of radiation oncologists and medical physicists involved in 3D image-guided brachytherapy. All project activities have been archived in the CLP4NET website of the IAEA, including training agenda and materials, meeting reports and the link to a relevant IAEA Human Health Report. This website has been useful for the review of the activities and is expected to be useful in the future sustainability of the project outcomes. The editorial board of these compiled materials was formed at the Final Review Meeting of the Project so that this valuable information can be useful in the future activities.

RAS6063	Strengthening the Application of Nuclear Medicine in the Management of Cardiovascular Diseases
Objective	To strengthen and improve the application of nuclear medicine in the Asian region, mostly of SPECT, in the management of cardiovascular diseases

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Home-Based Assignment	E-Learning modules on Nuclear Cardiology	To formulate two E-Learning modules on nuclear cardiology	25 May - 5 Jun.	Italy
Home-Based Assignment	Migration of Storyboard into E-learning modules using ARTICULATE E software	To migrate Story Board into E-learning modules using ARTICULATE software	20-31 Jul.	Italy, Macedonia

Project highlights for 2015

In 2015, the RCA regional project on strengthening the application of nuclear medicine in the management of cardiovascular diseases supported the development of the E-learning Module of Nuclear Cardiology (Myocardial Perfusion Imaging), in particular the Atlas of Myocardial Perfusion SPECT Studies. The completed module was placed on the IAEA Human Health Campus and can be consulted at:

<http://www-naweb.iaea.org/elearning/NMDI/AtlasOfMyocardialPerfusionSpectStudies/story.html>

RAS6065	Strengthening the Application of Stereotactic Body Radiation Therapy to Improve Cancer Treatment
Objective	To improve cancer treatment in the RCA region through strengthening the application of Stereotactic Body Radiation Therapy (SBRT)

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Training Course	Regional Training Course: An update on Advanced Technologies in Radiotherapy	Review and update knowledge of the participants on recent developments in the technology of radiation therapy for cancer.	19-22 Jan.	Japan
Training Course	Regional Training Course on Clinical Application of SBRT in Spine and Genitourinary Cancers	Provide training to radiation oncologists, radiation therapists and medical physicists for their implementation of SBRT in an effective and safe manner	20-24 Jul.	Austria

Meeting	Final Project Review Meeting	Review and assess the achievements of the project against the desired project outcomes and objectives and discuss and finalize the details of the activities stipulated in the work plan to be implemented under the new RCA project RAS6085.	9-13 Nov.	Korea
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Project highlights for 2015

The project was successfully completed in 2015. Through four regional training courses, 111 trainers composed of radiation oncologists, medical physicists, and radiation therapists were trained on various aspects of SBRT including Quality Assurance (QA) and Quality Control (QC). The number of centers conducting SBRT increased in many participating countries such as Australia (3 to 9), Bangladesh (0 to 1), Malaysia (1 to 2), Myanmar (0 to 1), Philippines (1 to 4), Sri Lanka (0 to 1), Singapore (3 to 4), Thailand (2 to 7) and Viet Nam (0 to 1), during the project period (2012-2015). Several countries expanded their clinical SBRT programs in newer indications owing to training received through the project (Bangladesh, China, India, Malaysia, Indonesia, Pakistan, Philippines, Singapore, Thailand, and Viet Nam). Six training hubs were established for the region, which are considered as a significant achievement of the project. A regional protocol of practice of SBRT in lung and liver cancers is under finalization.

Through the project, the participating GPs were able to build national teams that helped in creating awareness with regards to SBRT and expand the SBRT programme, while a few participating countries were able to start their SBRT programme. Through the regional training courses, a large pool of national trainers was developed in the relevant field. The trainers were able to further support training staff in various aspects of SBRT at the national level. Furthermore, many of the participating countries were able to learn and establish Quality Assurance (QA) and Quality Control (QC) processes needed for effective and safe delivery of SBRT.

RAS6071	Strengthening Radionuclide Therapy for High Impact Cancer Treatment Strategy in Member States of the Regional Cooperative Agreement
Objective	To reduce mortality and morbidity and improve the quality of life of cancer patients in the Member States of the region

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Home-based assignment	Draft guidelines for appropriate criteria for isotope therapy in cancer management and pain palliation	1-21 Apr.	Philippines
Training Course	Regional Training Course on Nuclear Medicine Techniques Thyroid Cancer, Bone Pain	Train experienced nuclear medicine physicians with consolidated experience in therapeutic Nuclear Medicine and enhance their skills and practice.	13-17 Apr.	Philippines

	Palliation and Peptide Receptor Radioisotope Therapy for Neuro-Endocrine Tumours			
Training Course	IAEA/RCA Regional Training Course on Radionuclide Therapies with special emphasis on Iodine 131 and Rhenium 188	Train qualified nuclear medicine physicians in the use of radionuclide therapies, focusing on 188-Relabelled molecules and alpha therapies.	8-12 Sep.	India

Project highlights for 2015

The year 2015 was the first year of the implementation of the project RAS6071. Two (2) training courses were implemented. 24 people were trained on the fundamental principles and application of therapeutic nuclear medicine, specifically, nuclear medicine techniques in the treatment of thyroid cancer, bone pain palliation and peptide receptor radioisotope therapy, 15 people were trained on radionuclide therapies with special emphasis on Iodine 131 and Rhenium 188. More training courses will be implemented in 2016 to enhance national capacity and capability in this area.

RAS6072	Strengthening Intensity Modulated Radiation Therapy Capability in the Region
Objective	To strengthen the practice of radiotherapy by adding the capability and safe practices of intensity modulated radiation therapy (IMRT) in the RCA region

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	Expert Steering Meeting	Develop training course materials and methods in Intensity Modulated Radiation Therapy (IMRT)	13-17 Apr.	Japan
Training Course	Regional Training Course on Basics of IMRT	Train radiation oncologists, medical physicists and radiation therapists on the methods of implementing IMRT	9-13 Sep.	Australia
Expert	Participation to FNCA Workshop on radiation oncology	Present highlights of achievements of RCA MSs	30 Nov. - 2 Dec.	India
Training Course	Regional Training Course on Intensity Modulated Radiation Therapy for Head and Neck Cancers and Brain Tumours	Train radiation oncologists and medical physicists to implement IMRT for head and neck cancers and brain tumors effectively and safely in the clinic.	30 Nov.-4 Dec.	India

Project highlights for 2015

The year 2015 was the first year of this 3-year project. The Expert Steering Meeting determined the project outline and contents of the first three training courses. Two training courses were successfully held in Australia and India with 46 participants. One national training course was conducted in Philippines with 120 participants composed of radiation oncologists, medical physicists, some radiation therapy technologists and nurses.

RAS6076	Improving Cancer Management Through Strengthening the Computed Tomography Cancer Staging Process
Objective	To optimize cancer management through the improvement of professional knowledge in CT scanning and staging

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Home-based assignment	Preparatory work to develop a smartphone application on TNM Cancer staging	1-22 May	India
Expert	Home-based assignment	Develop a smartphone application on TNM Cancer staging (Phase 2)	1 Jun. -31 Jul.	India
Meeting	Mid-term review meeting	Assess the progress of the project against the work plan and update the project work plan accordingly; identify training material to be developed for training of radiologists and/or nuclear medicine physicians on using CT in cancer management	30 Jun.- 3 Jul.	Viet Nam
Expert	Workshop on TNM staging in Gynaecological Malignancies	Present in the NTC as per the agenda and interact with the participants; present outreach approaches to improve the use of CT in cancer staging and justification guidelines in radiology in oncology practice	9-11 Oct.	India
Expert	Training in CT staging of cancers	Support national training on CT Cancer Staging	20-23 Aug.	Malaysia
Expert	National training in CT for Cancer Staging Head & Neck /Urogenital	Support national training on CT Cancer Staging Head & Neck/Urogenital	21-23 Aug.	Viet Nam
Training Course	IAEA/RCA Regional Training Course on CT Cancer Staging: Thorax and Musculoskeletal System	Provide training in the use of TNM classification in CT-based cancer staging in the Thorax and Musculoskeletal system so that the participants can provide training in their home countries	2-6 Nov.	China

Project highlights for 2015

In 2015, the Mid-term Review Meeting was moved from Nepal to Viet Nam due to the unexpected earthquake. Despite the short notice, a very successful meeting was held, yielding a concrete work plan going forward. Three national training courses were effectively held in Malaysia, India and Viet Nam. The year 2015 also saw the launch of the TNM Cancer Staging Application developed by India's Tata Memorial Centre, in cooperation with the IAEA during the 59th IAEA General Conference. The Cancer Staging Application enables cancer staging to be accessible, easy-to-use, and free of charge. The App has proven to be a hit, and has been downloaded by more than 6,000 users globally since its launch in September 2015.

RAS6077	Strengthening the Effectiveness and Extent of Medical Physics Education and Training
Objective	To improve the quality of health care and patient safety in areas related to radiation medicine through the delivery of medical physics services

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Expert Mission	Develop guidelines for accreditation of academic and clinical institutions for medical physics education and training	21-23 Jan.	Malaysia
Expert	Expert Mission	Development of e-learning structure in clinical training of medical physicists in nuclear medicine	23-25 Feb.	Thailand
Expert	Home-based Assignment	Development of the AMPLE Moodle learning environment	9-13 Mar.	Australia
Expert	Home-based Assignment	Analysis of workforce survey and education and training survey	9-13 Mar.	Australia
Expert	Expert technical meeting on Moodle website development to support medical physics clinical training	Provide training on the CLP4NET Moodle implementation of the IAEA clinical training guides, review pilot testing of the Moodle implementation, and develop a plan for enhancement of the Moodle implementation based on feedback	25-28 May	Australia
Expert	Home-Based Assignment	Enhancements to AMPLE e-learning environment	22-26 Jun.	Australia
Expert	Home-Based Assignment	Act as international coordinator for pilots of medical physics clinical training in RCA GPs; provide oversight of various processes within clinical training processes; coordinate with NPC for the training	10-21 Aug.	Australia

		programme and assist the national coordinator		
Expert	Home-Based Assignment	Development of AMPLE e-learning website	2-6 Nov.	Australia
Expert	Expert Mission	Develop guidelines for assessment and certification of medical physics trainees	30 Nov. - 3 Dec.	Nepal

Project Highlights for 2015

In 2015, an e-learning platform for participating countries was created for the dissemination of published clinical training guides in medical physics and improving the available resources, administration and communication for clinical training in medical physics. The development process, supported by a meeting in Canberra in 2015, progressed to the stage where e-learning pilots will be launched in early 2016, starting with IND and THA, with a number of other GPs to start a pilot before the close of 2016. Additional highlights include the development of a position paper on accreditation of Medical Physics MSc and clinical training programs, as well as a certification process for individual medical physics professionals, informed by expert meetings in MAL and NEP.

▪ Environment

RAS7021	Marine benchmark study on the possible impact of the Fukushima radioactive releases in the Asia-Pacific Region
Objective	To enable RCA Government Parties to evaluate the extent and the possible impact of the releases of radioactivity from the Fukushima Daiichi nuclear power plant into the marine environment and make scientific assessments of the data

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	Workshop to Review Implementation of QMS Programme	Review the overall progress of implementation of WMS programme and assess the real delivery of QA/QC activities in the national laboratories of participating countries as well as ensure the long-term self-sustainability of QMSs through instruction and practice in internal auditing	11-15 May	Philippines
Meeting	Expert Meeting	Review existing data, and discuss and agree on the necessary activities toward the completion of the project	6-10 Jul.	Monaco
Meeting	Final Project	Review and evaluate	9-13 Nov.	Japan

	Assessment Meeting	the implementation and achievements of the project against the project objective and workplan and share the knowledge, experiences and skills gained through the implementation of the project; discuss and agree on follow-up activities to sustain the project outputs after its completion and review priorities for the new regional project proposal planned for 2017-2020		
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Project highlights for 2015

The project RAS7021 was successfully completed in 2015. The salient achievements include established/enhanced national capacity and capabilities in marine sampling, radio-analysis, data interpretation, modelling, radio-ecological risk assessment, and impact assessment. New laboratory facilities for marine radiochemistry and radioecology have been established and/or upgraded in 12 countries, and new methods for analysis of a broader range of radionuclides in marine samples were developed. By using these capabilities, the volume and reliability of data in the Asia Pacific Marine Radioactivity Database (ASPAMARD) have remarkably increased, thereby improving the knowledge about the marine environment surrounding the participating countries. Furthermore, the project has promoted collaboration among the participating countries in the field of marine environment monitoring. They have benefited not only from the technical support provided within the framework of the project, but also from the effective consultation and interaction between more advanced countries and less experienced ones. Monitoring data and radioecological risk assessments provided by participating countries show that there has been no radiological impact detectable to marine ecosystems of the Asia-Pacific region (excluding some areas in the Japanese Exclusive Economic Zone within the vicinity of the Port of Fukushima). The recent Japan data shows that radionuclide levels in seawater are stable and low around Fukushima Daiichi Nuclear Power Station.

RAS7022	Applying Isotope Techniques to Investigate Groundwater Dynamics and Recharge Rate for Sustainable Groundwater Resource Management
Objective	To improve the capability for efficient and effective development and management of groundwater resources

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	Final Project Assessment Meeting	To review and evaluate the implementation and achievements of the project outcomes and objectives; To share the knowledge, experiences and skills gained through the implementation of the project; To discuss and agree on follow-up	23-27 Nov.	Indonesia

		activities to sustain the project outputs after its completion		
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Project highlights for 2015

The project RAS7022 was successfully completed in 2015. The major achievements include: national capacity and capabilities in the application of isotopic techniques to investigate groundwater water have been significantly enhanced through the implementation of regional training courses, technical meetings and expert missions. The participating countries determined the groundwater recharge sources and recharge rates which are considered as most important information and bases for the water management authorities/end-users in the formulation and implementation of a strategy for sustainable and effective management of groundwater resources in their countries. The project promoted the collaboration on groundwater studies among the participating countries.

RAS7023	Supporting Sustainable Air Pollution Monitoring Using Nuclear Analytical Technology
Objective	To enhance regional capabilities in source apportionment and fingerprinting of air particulate matter pollution in urban areas of RCA Government Parties through the use of nuclear analytical techniques (NATs)

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Expert	Expert Mission	Assess the progress and needs in the development of two regional databases for elemental concentrations and source fingerprints, and dissemination of results in scientific publications; To support QA/QC on XRF analytical results in Indonesia and disseminate use of NATS including SR and IBA techniques	8-18Jun.	Indonesia, Korea
Meeting	Regional Workshop on Aerosol and Pollution Source Fingerprint Databases	Workshop to update and complete the evaluation and QC/QA of two regional databases generated in the framework of the project: The Asia Pacific Aerosol Database (APAD) and the Australasian Source Fingerprint Identification Database (ASFID), and identify regional communalities concerning pollution sources, and interpret the data at regional level	8-12 Jun.	Korea
Expert	Home-Based Assignment	Edit a Technical Manual for x-ray fluorescence analysis of	31Aug.- 31 Oct.	New Zealand

		air particulate matter		
Meeting	Final Project Review Meeting	Review the project progress and identify the difficulties and obstacles met by the project counterparts and evaluate the results and outputs obtained including the role of RRUs; discuss and agree on the best means to disseminate the scientific results of the project, and discuss and finalize new work plan activities and specific inputs for the regional program	9-13 Nov.	New Zealand
Expert	Home-Based Assignment	Prepare a technical manual on the application of XRF technique for the analysis of air particulate matter samples	22 Dec.2015 - 8 Jan.2016	Austria

Project highlights for 2015

The project enhanced regional capabilities in source apportionment and fingerprinting of air particulate matter (APM) pollution in urban areas through the use of nuclear analytical techniques (NATs). The project also enabled the development of national capacity for sampling, characterization and analysis of APM for better understanding of air pollution issues; time series data have also been generated and organized. The participating countries have used NATs to generate absolutely unique datasets, APM elemental and sources apportionment covering the Asian region from ± 50 degree latitude spanning the period 2003 to 2015 for use in science-based air quality management at national and regional level. The data generated through the earlier and the current projects is the world's first fine particulate database, which has been utilized by national authorities as decision support information influencing the decision/policy making to revise or update air quality regulations and guidelines. During the last 4 years of the project implementation, the scientific communities in the participating countries have coordinated their efforts and 11 countries have published research findings in refereed journals. The project has also promoted enhanced utilization of Regional Resource Units and resource experts to lead the scientific activities.

RAS7024	Supporting Nuclear and Isotopic Techniques to Assess Climate Change for Sustainable Marine Ecosystem Management
Objective	To enhance regional capabilities for utilization and application of nuclear and isotopic techniques to assess climate change impacts on marine and coastal resources

Project Activities in 2015

Event	Title	Summary of Purpose	Dates	Host Country
Meeting	Final Assessment Meeting on Supporting Nuclear and Isotopic	Review project achievements against the workplan and identify obstacles in implementation; discuss	26-30 Oct.	Indonesia

	Techniques to Assess Climate Change for Sustainable Marine Ecosystem Management	outreach activities of the project planned in 2014 and examine the practical informational packages based on scientific findings and conclusions and their distribution to non-scientist stakeholders; discuss the storage and maintenance of project data in a database for open access.		
Expert	Home-Based Assignment	Development of Moodle website for RAS7024; assist in creating spaces for new projects, registering users and uploading materials; provide a user-friendly space to facilitate cooperation and efficient work	10-30 Dec.	Austria
Expert	Home Based Assignment	Development of Moodle website for RAS7024 as a web platform for collaborative support on nuclear and isotopic techniques to assess climate change for sustainable marine ecosystem with IAEA training guides TCS37 and 47 incorporated and project monitoring modalities	21-28 Dec.	Austria

Project highlights for 2015

The project RAS7024 was successfully completed in 2015. The major achievements of the project include: (i) enhanced awareness of participating countries on the usage of nuclear and isotopic techniques to assess climate change for marine ecosystem; (ii) strengthened capability of participating countries in the use of nuclear techniques to analyse/measure radionuclide and trace elements in sediments, weeds, and sea water for assessment of pollution (for example: ^{224}Ra , ^{226}Ra , ^{228}Ra , $\text{NO}_3(\text{N})$, P_3O_4 (P) and Si_2O_3 (Si) for sea water characterization); (iii) improved understanding and interpretation of the impact of climate change on the marine ecosystem and accumulation of contaminants/pollutants through the application of nuclear techniques; and (iv) agreement that isotopes in prawns and filter feeders are used to assess aquatic pollution across countries, and that nitrogen isotope data and maps provide strong guidance for cleaning up coastal systems.