

RCA News Letter

THE EIGHTH ISSUE | SEPTEMBER 2024

8th Issue of the RCA Newsletter

The 22 RCA Government Parties are gathering at the IAEA headquarters in Vienna, Austria for the 53rd RCA General Conference Meeting to discuss issues related to the RCA governance and Programme. Representatives from the IAEA and RCARO, as well as RCA experts will join the discussions on the various agenda items including review of the progress of the RCA Programme and preparations for the 2026-2027 programme cycle and RCA side event scheduled during the 60th IAEA General Conference. This issue also features the results and outcomes of RCA projects on the radiation therapy availability in the Asia-Pacific region, promoting Asian regional cooperation, human resource development programme of Indonesia and information on the IAEA's Ministerial Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme. To subscribe the newsletter, please [click here](#) or contact rcaro@rcaro.org. ✓

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RCA News

RCA Government Parties Paving the Way for Future RCA Programme and Holding RCA Side Event during 68th IAEA GC



The 46th RCA Meeting of National Representatives was held in Beijing, China on 14-17 May 2024

The Regional Cooperation Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific (RCA) is an inter-governmental regional agreement with a membership of 22 RCA Government Parties (GPs). One of the main activities of the RCA is to coordinate and implement Technical Cooperation Projects in collaboration with the IAEA to provide socio-economic benefits to its member Government Parties.

The National Representatives (NRs) of the GPs meet twice a year to review and discuss issues related to the implementation of the RCA Programme and related policy matters, namely the National RCA Representatives Meeting (NRM) held in April / May and the General Conference Meeting (GCM) held in September.

The 46th RCA Meeting of National Representatives was held in Beijing, China on 14-17 May 2024. Following the 46th NRM, the RCA GPs will gather at the IAEA headquarters in Vienna, Austria for the 53rd RCA GCM on 13 September 2024. The GCM is usually held for one day with a full agenda that requires attention and cooperation of all participants including the NRs, experts, representatives of the IAEA and the RCA Regional Office.

Hosted by the IAEA, the meeting is expected to review and discuss follow-up actions from the 46th NRM, implementation of the RCA Programme, governance matters related to the development of the RCA Programme and membership of the RCA, RCARO activities and arrangements for future

meetings.

The meeting will be opened by the RCA Chair (NR of China) who will welcome the participants. Representatives from the IAEA will also deliver remarks highlighting the major agenda of the meeting and expectations for productive deliberations and discussions.

During the meeting, participants will review the progress made following the outcomes of the 46th NRM, updates on the implementation of the RCA Programme, and development of the new projects for 2026-2027. Currently, about 6 projects are being considered for implementation under the RCA TC Programme for 2026/27.



The GCM will also discuss the progress of the social and economic impact assessment of the RCA Programme being conducted by the IAEA, aspects related to the human resource development strategy, as well as possible coordination with projects outside of the RCA.

The GCM also will discuss the means and ways that could enhance RCA governance; pathways for new membership to the RCA and report of the RCA Programme Advisory Committee (PAC).

Additionally, the meeting will discuss the activities of RCA Regional Office (RCARO). The RCARO implements various cooperative activities promoting and expanding partnership for the RCA. This year, it will include the progress of the preparations for the RCA side event during the 68th IAEA General Conference and a special exhibition at the IAEA's

Ministerial Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme.

With the aim to promote and highlight the achievements of the RCA Programme over the 52 years, the 46th NRM decided to hold an RCA side event during the IAEA General Conference and an RCA exhibition during the IAEA's TC Ministerial Conference, and formed a task force comprising RCA NRs. In consultation with this Task Force, the IAEA and experts, RCARO is preparing for the side event that would address interesting topics on the RCA's contribution for the sustainable development in the Asia-Pacific region and synergies with the IAEA initiatives such as Atoms4Food, Rays of Hope and NUTECH PLASTICS as well as RCA's outreach activities for future partnership.

* For more information, please refer to the flyer of the side event on page 17 and 18.

The RCA's special exhibition during the IAE's TC Ministerial Conference will also be a valuable opportunity to showcase the contributions made by the concerted efforts made by the RCA GPs and RCA stakeholders towards the sustainable development of the region, the goal of the RCA.

* For more information on the IAEA TC Ministerial Conference: <https://www.iaea.org/events/ministerial-conference-2024>

RCA will also discuss the arrangements for the subsequent policy meetings including the 47th NRM, expected to be held in Fiji in May 2025 and the 54th GCM to be held in September 2025 at the IAEA in Vienna. ✓

◆ RCA Policy Meetings

The National RCA Representatives of the 22 Government Parties (GPs) have two policy meetings each year; National RCA Representatives Meeting (NRM) and the General Conference Meeting (GCM).

◆ RCANRM

The NRM usually takes place in the first quarter in one of the RCA GPs to discuss and review matters related to RCA policy, the programme and other issues. The agenda includes follow up-actions of the previous GCM, review of the RCA Annual Report, implementation of RCA Programme, and activities of Working Groups and RCA PAC. The NRM officially elects the incoming RCA Chair at the beginning of the meeting. One day prior to the NRM, the RCA regularly organizes the meetings of the RCA Chairs and RCARO Standing Advisory Committee.

◆ RCA GCM

The RCA GCM is held at the IAEA headquarters annually, one week prior to the IAEA General Conference in September, to discuss the follow-up actions of the previous NRM and to consider matters related to the progress made on RCA policy, and the Programme. The meetings of the RCA Chairs and RCARO Standing Advisory Committee are held the day before the GCM.

RCA Projects

The current status on radiation therapy availability in the Asia-Pacific

- **Dr Dania Abu Awwad** | Discipline of Medical Imaging Sciences, University of Sydney, Australia



Cancer is increasing worldwide, and while there have been improvements in treatment and survival, there persists inequity in access to treatment around the world. This extends to access to radiation therapy, which is an essential component of comprehensive cancer care, making it a necessary factor in any national cancer control plan.

Models have been created to determine the proportion of cancer patients that would benefit the most from undergoing radiation therapy compared to other treatment options based on evidence-based guidelines to help plan for current and future radiation therapy services. The Collaboration for Cancer Outcomes Research and Evaluation (CCORE) is a flagship of the Ingham Institute in Sydney, Australia, and has been a member of the RCA project on closing the gap in radiotherapy access in RCA government parties (RCARP03). The CCORE team has developed a model that allows estimations to be made regarding the number of patients that would benefit from radiation therapy for each cancer type, allowing an overall optimal radiation therapy utilisation percentage to be calculated based on each country's cancer case mix. This model was developed using cancer staging and morbidity data from high-income countries.

It is well-known that detailed cancer registry data is lacking in many countries, particularly in low and middle-income countries (LMICs). That is a key issue that needs to be addressed as comprehensive cancer registries allows more detailed assessments to be made regarding the cancer distribution across a country, treatments needed based on stage at diagnosis, and proper planning of early detection or screening programs to improve stage at diagnosis and overall survival rates. Simultaneously, limited detailed data from LMICs adds a further challenge to estimating the number of treatment facilities needed and where, including megavoltage machines for radiation therapy. After comparing the cancer staging data across the RCA countries and all of the Asia-Pacific, Malaysia was found to have the most comprehensive data in order to allow adjustments to be made to the CCORE model. Hence, the

CCORE model was updated using cancer staging from a LMIC and this version was used in conjunction to the original model to apply to different countries based on their income level.

Using CCORE's radiation therapy utilisation model, we can estimate the number of cancer patients that would benefit from radiation therapy, calculate the number of megavoltage machines needed to meet that demand, and assess the percentage of patients that would obtain local control or survival benefits. The datasets used to calculate these findings include publicly available cancer incidence data from the Global Cancer Observatory (GLOBOCAN), megavoltage machine availability from the Directory of Radiotherapy Centres (DIRAC), and income classifications from the World Bank.

One of the benefits of detailed cancer data is the ability to make comparisons over time, whether that may be to assess improvements in mortality and survival or to observe (?) worsening gaps regarding access to radiation therapy. The CCORE team has evaluated the number of cancer cases and megavoltage machines available worldwide since 2002, and even if gaps exist today, we can make comparisons to assess if this has been a long-term issue or due to higher rates of cancer cases. GLOBOCAN also has projected cancer case numbers which allows predictions to be made and allow policy makers to prepare diagnosis and treatment services that will be required to meet the estimated future demands.

Results:

Across 57 Asia-Pacific countries, there were 9.48 million new cancer cases in 2020. With an overall optimal radiation therapy utilisation rate of 49.1%, the number of new cancer patients that would be recommended for radiation therapy based on guidelines is 4.66 million. To be able to meet the radiation therapy demands of these new cancer patients, 12098 machines are needed but only 5308 are available according to DIRAC, leaving a gap of almost 7000 machines.

The data breakdown for each of the RCA countries is presented in table 1. The optimal radiation therapy utilisation rate ranged from 32.0% in Mongolia to 57.6% in Bangladesh. Within cancer types, vaginal (94%) and breast (87%) cancers had the highest optimal radiation therapy utilisation rate using the CCORE model based off high-income staging data. Updating the CCORE model with LMIC staging data

	RCA Country	New Cancer Cases	Optimal RTU	New RTU Cases	MVM Demand	MVM Supply	MVM Gap	Cases/ MVM Unit	Local Control %	Local Control Cases	Overall Survival %	Overall Survival Cases
Lower middle income	Bangladesh	155697	57.58%	89656	219	36	-183	2490	11.36%	17693	5.49%	8548
	Cambodia	18120	43.28%	7843	19	3	-16	2614	7.93%	1437	3.61%	655
	India	1314030	55.72%	732139	1790	692	-1098	1058	12.78%	167942	6.03%	79221
	Indonesia	389768	51.58%	201039	492	85	-407	2365	10.79%	42045	4.74%	18468
	Laos	9025	44.18%	3987	10	1	-9	3987	7.36%	664	3.29%	297
	Mongolia	5675	32.00%	1816	4	5	1	363	4.53%	257	2.14%	121
	Myanmar	72907	51.12%	37270	91	22	-69	1694	10.20%	7438	4.85%	3538
	Nepal	20280	49.69%	10078	25	9	-16	1120	10.13%	2054	4.71%	956
	Pakistan	174036	53.32%	92794	227	63	-164	1473	10.18%	17714	4.57%	7957
	Philippines	152803	49.23%	75225	184	69	-115	1090	8.08%	12352	3.18%	4865
	Sri Lanka	29179	54.31%	15848	39	25	-14	634	10.81%	3156	4.96%	1448
Vietnam	181333	45.57%	82625	202	56	-146	1475	6.83%	12377	2.90%	5254	
Upper middle income	China	4546400	47.72%	2169609	5305	1832	-3473	1184	5.21%	237024	2.15%	97802
	Fiji	1479	51.30%	759	2	0	-2	N/A	10.46%	155	3.87%	57
	Malaysia	48160	50.63%	24384	60	69	9	353	8.61%	4149	3.56%	1716
	Thailand	187677	46.70%	87643	214	125	-89	701	7.69%	14427	3.23%	6068
High income	Australia	141182	47.31%	66800	232	224	-8	298	9.11%	12859	2.37%	3348
	Japan	1017282	46.29%	470866	1635	1060	-575	444	7.70%	78341	2.27%	23083
	South Korea	226918	42.54%	96525	335	189	-146	511	6.74%	15291	2.15%	4869
	New Zealand	25663	48.00%	12318	43	35	-8	352	9.45%	2425	2.11%	542
	Singapore	23260	48.63%	11311	39	27	-12	419	8.64%	2009	2.70%	628
	RCA Total	2522853	53.52%	1350318	3302	1066	-2236	1267	11.30%	285129	5.21%	131327

Table 1: RCA countries* data breakdown (*excludes Palau as they have no GLOBOCAN data.)
RTU: Radiation therapy utilisation / MVM: megavoltage machines

showed higher percentages for vaginal (97%), lung (83%), and oesophagus (83%). Between the two models, the highest increase in utilisation was seen for cancer of the uterus and vulva and this was a result of higher late-stage diagnosis among LMIC populations. Simultaneously, pancreatic cancer saw the largest decrease which was due to lower utilisation of radiation therapy among late-stage cancers. Hence, cancer staging plays an important role in determining which cancer treatments would be best for patients as there are variations in how radiation therapy might be used for late cancer stages for different cancer types.

A Gap already exists between the number of megavoltage machines needed for a certain population compared to how many are present. Still, megavoltage machines are being acquired at a slower rate than the increase in the number of cancer cases which only widens the already existing gap between demand and supply. In fact, the number of megavoltage machines increased by 31% from 2012, but demand increased by 42%. Figure 1 presents the megavoltage machine demand and supply data overtime based on income groups for the Asia-Pacific. Looking at previous studies

by CCORE, the deficit between demand and supply in the Asia-Pacific region was approximately 5400 in 2012. Since then, the gap in supply has increased by 24.4%. Breaking it down further, low-income countries only had 9.9% of the megavoltage machines required to meet demand. While better in lower and upper middle-income countries, it was still at 34.7% and 40.5% respectively. High income countries met 67.9% of their megavoltage demand.

If this trend persists, LMICs will be unable to bridge the gap in RT accessibility. Over the period from 2020 to 2040, the demand for RT is projected to surge by 85%, 64%, and 51% in low-income, lower middle-income, and upper middle-income countries, respectively, while high-income countries are expected to experience a comparatively modest 25% increase. This means that 12,000 megavoltage machines will be needed by 2040 to be able to treat the cancer patients that would need radiation therapy. This emphasises the importance of incorporating radiation therapy into comprehensive cancer control planning, and urgent action is needed to alleviate the burden of cancer in both the present and future.

LMICs would benefit the most if there is a sufficient supply of megavoltage machines and radiation therapy is used according to evidence-based guidelines. The projected population benefit from radiation therapy in terms of local control was 7.42% for the Asia-Pacific region overall, but ranged from 4.53% in Mongolia to 12.78% in India. The 5-year survival benefit attributed to radiation therapy in the Asia-Pacific region was 3.05%, ranging from 2.11% in New Zealand to 6.03% in India. This means that approximately 703,000 and 289,000 patients with cancer are expected to experience a 5-year local control benefit or survival benefit from an optimal supply of radiation therapy respectively.

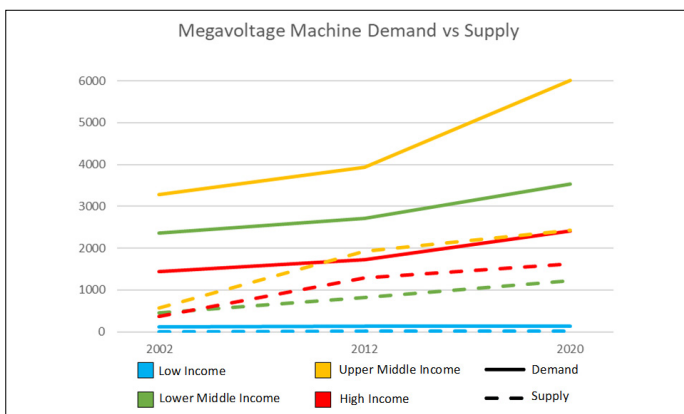


Figure 1: Megavoltage machine demand vs supply for different income groups of Asian-Pacific countries

Conclusion

The available evidence highlights the critical role of radiation therapy services in cancer treatment, with nearly half (49.1%) of cancer cases requiring radiation therapy. However, despite its significance, radiation therapy remains absent from the majority of cancer control plans in the Asia-Pacific and low-income countries. Notably, low-income countries exhibit a disproportionately higher number of cancer patients per megavoltage machine compared to middle and high-income countries.

Disparities in megavoltage machine availability have continued to widen in LMICs over the past decade and are projected to worsen by 2040. These findings underscore the critical need to incorporate radiation therapy into national cancer control plans and to urge governments and policymakers in the Asia-Pacific region to prioritise investment in this sector.

This study offers novel insights by addressing previous limitations in radiation therapy utilisation estimates, particularly due to the impact of late stage at diagnosis typically seen in LMICs. By using the most current GLOBOCAN and DIRAC data, this study provides updated estimates of availability gaps across each country in the Asia-Pacific region. ✓

Featured Articles

Promoting Asian regional cooperation projects through RCA for 30 years

- **Nakano Takashi** | National RCA Representative of Japan, QST Associate, National Institute for Quantum Science and Technology (QST)

Brief introduction of my career other than connection to IAEA/RCA

I began my career as a radiation oncologist when I graduated from Gunma University and joined the Department of Radiation Medicine at Gunma University in 1979. I engaged in education, research and clinical practice as a doctor there in the medical school. At the same time, I entered the doctoral course at the Graduate School of medicine. In 1983, after graduation from the doctoral course, I was appointed as a doctor in the department of hospital at the National Institute of Radiological Sciences (NIRS) in Chiba, Japan in July.

I have been participating in international cooperation activities of the IAEA since 1993, when I was 40 years old.

In my 30s and 40s, I worked as a radiation oncologist at the NIRS researching and developing clinical techniques, mainly brachytherapy for gynecological tumors as well as developing particle beam therapy using fast neutrons, protons, and heavy ions. I also liked two academic fields, physics and pathology so that I researched histopathological differences in radiation sensitivity among uterine cancers, and published many findings in academic journals such as *Cancer Research* and *Cancer*, etc. In 2001, I was appointed as Professor of Radiation Oncology at Gunma University. I have trained fifteen of my colleagues to become professors and many young radiation oncologists during my professorship to contribute to the human resources development in radiation oncology.

My involvement with the IAEA and RCA

My first encounter with IAEA

My research caught the eye of a head of radiobiology at NIRS who was involved in IAEA collaborative research, and I was requested to participate as a principal researcher in the IAEA Coordinated Research Program (CRP) "Radiobiology: Prediction of Radiosensitivity," in 1993, which was my first involvement with the IAEA. In February 1994, I attended the IAEA International Conference of the CRP program held at the Marie Curie Institute in Krakow, Poland. At the Marie Curie Museum in Warsaw, I reaffirmed the excellent

achievements of Marie Curie not only in physics research but also in cancer treatment using radium and X-rays and was deeply impressed by her strong passion and drive, which led me to become devoted to this path.



Meet DG Mr. Yukiya Amani and Symposiast at IAEA scientific forum at IAEA GC in Sept. 2010

My RCA activities and fields

My first encounter with RCA was through this IAEA CRP activity. In 1995, a project was started to help cancer patients by improving radiation therapy technology for uterine cancers which is particularly common in Asia. In 1996, I was first requested to participate in RCA activities as the project coordinator for the RCA project (RAS6027) "Quality assurance in radiation therapy". I had worked for improving treatment methods and technological transfer of brachytherapy for uterine cancer and participated in RTCs and the project review meetings held under the program.

Even after I became a professor at Gunma University in 2000, I continued IAEA and RCA cooperation activities, leading and managing six RCA projects related to radiation therapy (RAS6035, RAS6040, RAS6048, RAS6053, RAS6072, RAS6086) as Lead Country Coordinator (LCC) from 2000 to 2021. Under these projects, I have held 15 Regional Training Courses (RTCs), Expert Steering Meetings, Review Meetings and Expert missions for the IAEA/RCA projects at Gunma University or NIRS, contributing to the education of medical staffs of radiation therapy in the RCA region and to the technological transfer of radiation therapy from the region to each member countries.

In 2019, I retired as the Vice President of Gunma University and became the Director of a Directorate of QST. Then, in

September 2019, the Japanese Ministry of Foreign Affairs (JMFA) requested that I take over as the RCA National Representative (NR) of Japan and I accepted the position.

My mentor, Professor Teruo Nagai of the Department of Radiation Medicine at Gunma University, also worked as a technical officer at the IAEA until 1974, when he became a professor at Gunma University, promoted from Principal Investigator at the NIRS. Hence, I feel a strong connection between the IAEA, the NIRS, and Gunma University.

Efforts to effectively manage RCA activities and achieve visible results

Establishment of RCA National Advisory Committee (RCA-NAC) of RCA

In 2003, in order to carry out systematic cooperation in RCA activities from Japan, I requested the JMFA to establish the RCA-NAC for the Human Health Sector and established the domestic RCA support system. When I was appointed as Thematic LCC of Human Health which coordinates the entire RCA projects of Human Health sector in 2005, I was able to easily share information of all project activities even in areas other than radiation therapy through RCA-NAC system and was able to effectively coordinate the programs in the human health sector. In 2014, the JMFA expanded this RCA-NAC to cover all RCA sectors, including industry, agriculture, environment, and radiation protection etc., and RCA-NAC has supported all Japanese RCA activities. Thus, we have improved domestic project implementation.

Improvement of RCA implementation method

In the 2000s, RCA activities consisted mainly of training courses, but in reality, the qualification of the participants were insufficient in the responsible departments of each country. Most RTC attendees had a weak sense of purpose for participating in RTCs, and therefore rarely transferred the knowledge and skills acquired at RTCs back to their home countries nor did they intentionally conduct domestic technical training, etc... To address these challenges, since 2010, project planning methods that clarify project objectives, enable visible results, and evaluate social returns have been gradually established with the guidance of focal persons (FPs). I took the initiative to plan and implement a project that included forming a National project team (NPT) domestically, having the members of the team to participate in an RTC, acquiring high-level knowledge and skills, and then taking that knowledge and skills back to their home countries to hold National training courses (NTCs) there as domestic trainers to improve the knowledge and skills of the domestic

specialists. This methodology for technology transfer was recognized as a policy implementation method that reliably transfers technology from the region to the country and leads to improvements in the medical community. This has been the basic RTC implementation model ever since.



RAS6072 of IMRT Capability in the RCA Region: Project planning Expert Meeting @ IAEA in Vienna in Jan. 2015

Establishment of an NPO to support for RCA activities and other international cooperation

In 2006, I also established the NPO Japanese organization for international cooperation in Radiation Medicine (JOICRM) in the private sector as an organization with the purpose of supporting RCA activities in Japan. The NPO has been conducting public relations activities for RCA activities, such as undertaking the secretarial job of the RCA-NAC and holding domestic RCA symposiums for awareness of RCA to the public in Japan.

The NPO has also carried out their own international cooperation activities in response to requests from RCA participants. For example, our NPO donated a refurbished used "brachytherapy" device and the necessary set of radiation therapy equipment to the 48th Model Hospital in Sana'a, Yemen where there was no brachytherapy equipment at all. In January 2011, the Prime minister, seven other ministers, and many other distinguished participants in addition to hospital staff participated in the opening ceremony of the new brachytherapy ward of the hospital and celebrated the start of the hopeful radiation therapy. The Prime Minister congratulated us, saying that this project based on cooperation from the Japanese private sector, is very important and is the most beautiful example of international cooperation. It was a big event that made our hearts warm and stimulated our desire to contribute to the international community. In addition, we donated a set of educational radiation therapy planning equipment to the Bangladesh Radiotherapy Club to improve the skills of radiation oncologists in 2000.



Donation of brachytherapy equipment to Hospital in Yemen by NPO JOICRM to realize the first start of brachytherapy for cervical cancers in January 2011



The signing Ceremony of Designation of IAEA Rays of Hope Anchor Centre and Onchikai Aizu Chuo Hospital's Donation with DG Rafael M. Grossi of the IAEA, 14 March 2024, Fukushima Medical University

Establishment of the Asian Federation of Radiation Oncology Societies (FARO)

In 2001, Asian leaders of radiation oncology and I established the (FARO) with the aim of strengthening cooperation and support among radiation oncology societies in Asian countries and for improving research and education of radiation oncology in Asian. As Secretary General, I coordinated cooperations between the FARO and RCA for several years to ensure the sustainability of RCA's international cooperation activities. Subsequently, RAS6086 was implemented in collaboration with FARO and national radiation oncology societies in RCA countries with the aim of improving cancer radiation therapy techniques. I feel that the cooperation between RCA, the regional academic society as FARO and domestic academic societies is very useful for efficiently and effectively transferring technology from regional to national sites after completion of the RCA program.

Promoting cancer care through joint activities with Rays of Hope

Since 2022, the IAEA has been promoting the Rays of Hope initiative, an international cooperative activity to improve cancer treatment in developing countries, under the strong leadership of Director General Rafael Grossi. As a Japanese NR, in order to actively cooperate with "Rays of Hope," I formed the Japan Anchor Center with 16 medical organizations with a track record of cooperation with the IAEA and began activities. We were also able to secure a large donation of 200,000 euros from the Japanese government and 100,000 euros from the privately-operated Onchikai Aizu Central Hospital. Based on this, we aim to synergistically enhance the cancer medical activities of RCA activities.

Other related activities

JMFA has been conducting training tours for IAEA ambassadors to the Board of Governors to raise their awareness of the peaceful use of nuclear energy from 2008. I have cooperated with the tours a total number of 15 times up to the

present. I have welcomed ambassadors from over 70 countries to Gunma University and affiliated hospitals, where I have given lectures on various aspects of radiation medicine and introduced them to Japan's cutting-edge treatment technologies, such as heavy ion therapy. It was a great opportunity for me and my colleagues to have a fruitful exchange of opinions with prominent IAEA ambassadors, and it was a valuable and enjoyable memory.

Project Title(code)	Participation	Duration	Activities
LDR and HDR Brachytherapy in Treating Cervical Cancer (RAS6035)	Project counterpart	2001-2004	4 Regional Training Courses (RTCs) at Gunma University in 2001-2004
Improvement in Quality of Brachytherapy of Frequent Cancers in the Region (RAS6040)	LCC	2005-2008	3 RTCs at Gunma University in 2005-2007
Application of 3D CRT for Predominant Cancers in the RCA Region (RAS6048)	LCC	2007-2009	Final Review Meeting at Gunma University in November 2009
Improving IGRT for Common Cancers in the RCA Region (RAS6053)	LCC	2010-2014	- Expert Steering Meeting at Gunma University in August 2010 - RTC at Gunma University in 2012 - Final Review Meeting at Gunma University in 2014
Strengthening IMRT Capability in the Region (RAS6072)	LCC	2014-2017	- Expert Steering Meeting at Gunma University in 2015 - RTC at Gunma University in 2017
Strengthening cancer management programs in RCA GPs (RAS6086)	LCC	2018-2021	- Kick-off Meeting at Gunma University in 2017 - Midterm Review Meeting at NIRS in 2019

Table 1 IAEARCA activities held in Japan under Nakano's initiative (2001-21)



Prof. Nakano was awarded the RCA project Award at the 50th Anniversary of RCA, IAEA in Vienna in Sep. 2022, with Prof Tamaki awarded RCA Special Awards on behalf of RCA Programme Advisory Committee (RCA PAC)

Finally

Our RCA cooperation are basically volunteer activities, and we experienced many difficulties due to the financial, human resource, and time constraints. However, we have tried our best to enrich our IAEA and RCA activities.

I believe that my colleagues in my department will also develop an international perspective and become active internationally, leading Japan forward. In fact, many of my collaborators, including Prof. Yoshiyuki Suzuki, Prof. Noriaki Tamaki, Prof. Shingo Kato, Director Masaru Wakatsuki, and Dr. Nobuteru Kubo are still actively working on RCA activities as representatives of Japan. From my experience, I am convinced that the cultivation and training of human resources is the most important foundation for Sustainable Development of RCA program.

Finally, I am honored and pleased to have received the RCA Project Award on behalf of Japan at the RCA 50th anniversary event, in recognition of Japan's efforts in RCA (Phot 5). This honor was only possible with the cooperation of my department members and the department's steady activities of international contribution, so I express sincere appreciation for them.

Through my participation in RCA activities for the past 30 years, I have firmly established my belief in the importance of the IAEA's international contributions. I am deeply grateful to have been able to create an international network of people through this international cooperation, and to have fostered mutual friendships, which are my precious treasure. I am more and more motivated, despite the years passing. I look forward to your continued support in the future. ✓

Articles from GPs

Competency Development Initiative Programme for International Human Resources of the BRIN, Indonesia

- **Mohamad Rendi Astono** | Trainer/Instructor,
International Human Resources Competency Development,
Directorate of Competency Development, BRIN (National
Research and Innovation Agency)



Globalization has transformed the way organizations operate, necessitating a workforce that understands and appreciates diverse perspectives. In our rapidly globalizing world, the role of international human resources has become increasingly crucial. At the National Research and Innovation Agency of Indonesia (BRIN), we

emphasize the cultivation of a global mindset through targeted training programs and exposure to international best practices. BRIN, through the Directorate of Competency Development, recognizes the importance of developing talent equipped to navigate diverse cultural and professional landscapes.

Competency Development for International Human Resources Division

The Competency Development for International Human Resources Division is one of the divisions in the Directorate of Competency Development which focuses on identifying development programs of international human resources and analyzing potential cooperation with other countries in the science & technology scope. Our competency development initiatives include:

- Establishing the Human Resources Development (HRD) country plan for the nuclear energy sector.
- Initiating an international capacity building cooperation meeting.
- Creating guidelines for organizing international Human Resources (HR) institutional training with foreign funding.
- Organizing International HR institutional training with foreign funding.
- Drafting project proposals of domestic funding for an International HR institutional training (aided by the Ministry of Finance).
- Creating guidelines for organizing International HR institutional training with domestic funding.

- Organizing International HR institutional training with domestic funding.

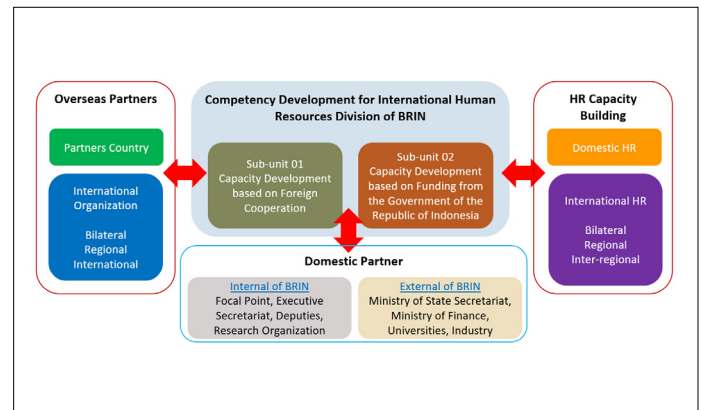


Fig 1. Business process of Competency Development for International Human Resources Division.

Scope of work and Tasks

There are two sub-units in the Competency Development for International Human Resources Division, **Sub-unit 01:** Capacity Development based on Foreign Cooperation, and **Sub-unit 02:** Capacity Development based on Funding from the Government of the Republic of Indonesia.

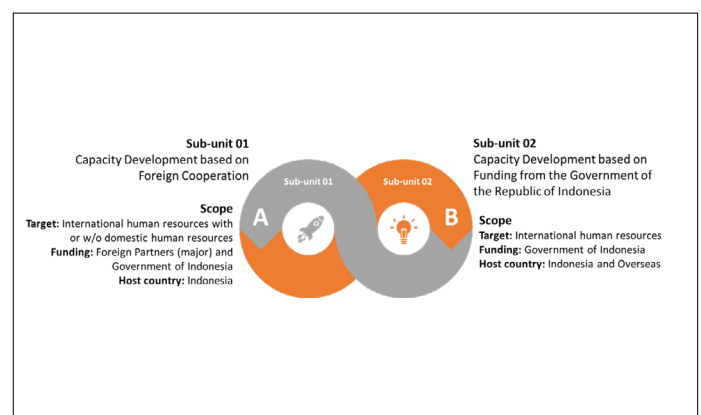


Fig 2. Sub-units of the Competency Development for International HR Division.

Sub-unit 01 (Capacity Development based on Foreign Cooperation)

1. Identifying and analyzing potential foreign cooperation programs and partners in the field of science and technology for Human Resources (HR) competency development together with internal and external parties of BRIN.

2. Designing, negotiating and/or developing a science and technology HR competency improvement program through collaboration with foreign partners and domestic partner (internal/external parties of BRIN).
3. Organizing HR competency development programs through foreign cooperation for domestic and foreign human resources.
4. Evaluating the implementation and review of foreign cooperation competency development programs together with foreign and domestic partner.
5. Preparing regular reports and documentation regarding foreign cooperation activities and results of implementing HR competency development of science and technology.

Sub-unit 02 (Capacity Development based on Funding of the Government of Indonesia)

1. Identify and analyzing international HR competency development program plans based on internal capabilities of BRIN.
2. Designing, negotiating and/or developing international HR competency improvement programs in collaboration with the Ministry of Finance and the Ministry of State Secretariat of Indonesia.
3. Drafting a project Proposals of Domestic Funding for international HR institutional training (aided by the Ministry of Finance).
4. Organizing international HR competency development programs for foreign countries/institutions along with the Ministry of Foreign Affairs and other parties in accordance with provisions.
5. Evaluating the implementation and review of international HR competency development programs jointly with the Ministry of Foreign Affairs, the Ministry of State Secretariat of Indonesia, the Ministry of Finance, and other related parties.
6. Preparing regular reports and documentation regarding activities and results of the implementation of international HR competency development programs.

Strategic Partnerships and Collaborations

To further enrich our competency development programs, we actively seek partnerships with international organizations, universities, and research institutions. These collaborations facilitate knowledge exchange, joint research initiatives, and opportunities for domestic and international human resources to gain exposure to cutting-edge practices and technologies globally.

This is the list of international organizations and cooperation agreement we collaborate with:

1. International Atomic Energy Agency (IAEA)
2. Japan Atomic Energy Agency (JAEA)
3. Regional Cooperative Agreement - Regional Office (RCARO)
4. Korea Atomic Energy Research Institute (KAERI)
5. Food and Agriculture Organization of the United Nations (FAO)

6. IOC Sub-Commission for the Western Pacific (WESTPAC) - Intergovernmental Oceanographic Commission (IOC/UNESCO)
7. Asia Pacific Center for Theoretical Physics (APCTP)
8. South-South and Triangular Cooperation (SSTC)
9. European Organization for Nuclear Research / Conseil Européen pour la Recherche Nucléaire (CERN)
10. United States of America - Department of Energy (US-DoE)
11. National Nuclear Security Administration (NNSA) of US-DoE
12. State Atomic Energy Corporation Rosatom (ROSATOM), Russia
13. Abdus Salam International Centre for Theoretical Physics (ICTP), Italy
14. Centre for Science & Technology of the Non-Aligned and Other Developing Countries (NAM S&T Centre)
15. Instituto Nacional de Ciências e Tecnologia (INCT), Timor-Leste / East Timor.

Activities Program Implementation

Throughout the implementation of the program, there were two competency development activities that took place until last June. The first one is the “Training Course (TC) on Hybrid Corn Seed Release”, and the second is the “APCTP Workshop on Development of EPICS-Based Instrumentation and Control System in Accelerator Research Facilities” as shown in Table 1. Furthermore, Figures 3 and 4 depict documentation of training events and workshops conducted for competency development activities.

No.	Title of Activity	Country (Date)	Participant
1	Training Course (TC) on Hybrid Corn Seed Release (a)	Malang, Indonesia (2 – 9 June 2024)	East Timor: 5 participants Indonesia: 3 participants
2	APCTP Workshop on Development of EPICS-Based Instrumentation and Control System in Accelerator Research Facilities (b)	Yogyakarta, Indonesia (10 – 14 June 2024)	Malaysia: 1 participant Indonesia: 13 participants

Table 1. Training Course and Workshop on HR competency development program

- (a) Hybrid Corn Seed Release Training Course is a program created by the Republic of Indonesia Government for South-South Countries that covers knowledge and skill in the area of producing and releasing hybrid corn seeds, including cultivation technology, nutrient management, pest and disease management, post-harvest, and seed certification system in Indonesia.
- (b) Experimental Physics and Industrial Control System (EPICS) is software for integrating open-source control systems. EPICS enables communication between devices, performing control and feedback on various parts of the device from the control room, even remotely via the internet. Because of its reliability, currently, EPICS is widely used in accelerator research facilities such as the CERN



Fig 3. TC on Hybrid Corn Seed Release, Malang, Indonesia 2 – 9 June 2024.



Fig 4. APCTP Workshop on Development of EPICS-Based Instrumentation and Control System in Accelerator Research Facilities, Yogyakarta, Indonesia 10 – 14 June 2024.

hadron collider facility in Europe, the synchrotron facility at JPARC in Japan, the SLRI light source synchrotron in Thailand, etc. Apart from accelerators, EPICS can also be used for instrumentation and control systems in large experimental telescope facilities. Currently, the use of EPICS and experts in developing EPICS in Indonesia is still very small. Therefore, workshop activities need to be carried out to increase the number of experts at using EPICS and for developing reliable EPICS-based instrumentation and control systems for accelerators and other complex facilities. Through this activity, it is hoped that participants will be able to gain new knowledge about EPICS and networks and be able to apply EPICS-based control instrumentation systems, especially in the field of accelerator technology.

No.	Topic	Institution	Country
1	Data and Work Repository Management Training	Instituto Nacional de Ciências e Tecnologia (INCT)	East Timor
2	Mutation Breeding on the Plant Commodities.	- Council for Scientific and Industrial Research (CSIR) - Ministry of Agriculture of Zanzibar	Ghana, Zanzibar
3	Domestic Water Processing for Developing Countries	- Ministry of Agriculture of Zanzibar - Ministry of Land and Mineral Resources of Fiji	Zanzibar, Fiji
4	Utilization of Remote Sensing Technology for Air Quality	CSIR	Ghana
5	Utilization of Remote Sensing Data for Land and Forest Fires	Ministry of Agriculture and Forest of Laos	Laos

Table 2. List of Proposal target countries for the 2025 competency development program

Apart from the activities described above, several planned competency development programs that will be held in the second half of this year (July–December 2024) are summarized as follows:

1. Nuclear Security Training Course on Insider Threat Mitigation, US-DoE (Serpong, Indonesia, July 2024)
2. Regional Training Course (RTC) on Radiotracer Technology for Diagnosing the Performance of Industrial Processes (Serpong, Indonesia, August 2024)
3. TC on Hydrodynamic in Ship Design (Surabaya, Indonesia, August 2024)
4. Follow-up Training Course (FTC) on Nuclear Emergency and Radiological Preparedness (Serpong, Indonesia, August 2024)
5. The 2nd Korea-Indonesia Physics Joint Workshop: Introduction to Interdisciplinary Physics (Cibinong, Indonesia, August 2024)
6. TC on Blue Carbon Assessment by Spatial Approach in Seagrass (Indonesia, Sep – Oct 2024)

7. HPC School: Foundation in Computational Biomolecular and Biosystem Research (Indonesia, October 2024)
8. FTC on Environmental Radioactivity Monitoring (Serpong, Indonesia, November 2024)

In addition to the competency development program this year, we are also drafting a training course project proposal which has a specific country target for the following year, in 2025, as shown in Table 2. These competency development programs are funded by Ministry of Finance of Indonesia in order to provide grants to Foreign Governments/Foreign Institutions in accordance with the policies of the Minister of Finance and applicable laws and regulations. ✓

What's More'

IAEA MINISTERIAL CONFERENCE

on Nuclear Science, Technology and
Applications and the Technical
Cooperation Programme

26~28 November 2024, Vienna, Austria

The IAEA is holding the Ministerial Conference on Nuclear Science, Technology and Applications and the Technical Cooperation Programme on 26-28 November 2024. The conference aims to facilitate the development of the nuclear techniques, enhance the support of Agency towards Sustainable Development Goal and increase awareness of the decision makers.

RCA is also holding an exhibition during the conference.

The RCA Government Parties and relevant RCA stakeholders are welcome to visit the booth.

Conference website:

<https://www.iaea.org/events/ministerial-conference-2024>



IAEA



Call for Articles

RCA Newsletter



☑ **Call for *Newsletter Articles***

– Highlights of the activities on RCA and Nuclear Science Technology in the Asia Pacific Region

We welcome contributions of the experts and stakeholders of the RCA Government Parties with articles related to the RCA activities and nuclear science and technology applications of the Asia-Pacific region. The articles can cover various topics related to the achievements/activities of the RCA projects, insights/perspectives on the RCA and nuclear science and technology of the RCA Government Parties as well as regional/international conferences being held in the RCA region. A standard format of an article is about 1,000 words (2-5 pages of WORD document in English) accompanying several pictures/images related to the article. Relevant guidelines and article templates can be found [here](#). Please send us the article to kelly@rcaro.org.

See the latest edition of RCA newsletter: <https://www.rcaro.org/newsletter>

RCA : Advancing Sustainable Development in the Asia-Pacific Region

📅 **17 September 2024**, 15:30-17:30

📍 Vienna International Center, Room CR3, 7th Floor, C building



Keynote Speakers

- Rafael Mariano Grossi, Director General, IAEA
- Sang-Im YOO, Minister of Science and ICT, Republic of Korea
- Jing LIU, Vice Chairman, China Atomic Energy Authority

Topics

- Contribution of RCA to the socio-economic development in the Asia Pacific region
- Creating Synergy between the RCA Programme with the IAEA initiatives
- Expanding the RCA's outreach activities for future partnership

RCA : Advancing Sustainable Development in the Asia-Pacific Region

📅 **17 September 2024**, 15:30-17:30

📍 Vienna International Center, Room CR3, 7th Floor, C building

PROGRAMME

Moderator: Lili Xiao, RCA Chair, China

15:30-15:45

Key Note Speeches

- Rafael Mariano Grossi, Director General, IAEA
- Sang-Im YOO, Minister of Science and ICT, Republic of Korea
- Jing LIU, Vice Chairman, China Atomic Energy Authority

15:45-15:55

Contribution of RCA to the socio-economic development in the Asia Pacific region

by Natascha Spark, National RCA Representative of Australia,
Australian Nuclear Science and Technology Organisation(ANSTO)

15:55-16:25

Creating Synergy between the RCA Programme with the IAEA initiatives

by Amer Manzoor, National RCA Representative of Pakistan, Pakistan Atomic Energy Commission (PAEC),
Takashi Nakano, National RCA Representative of Japan, National Institute for Quantum Science and Technology (QST),
and Tita Puspitasari, Research Center for Radioisotope of Indonesia, National Research and Innovation Agency (BRIN)

16:25-16:35

Expanding the RCA's outreach activities for future partnership

by Dae Ki KIM, Director of the RCA Regional Office (RCARO)

16:35-17:00

Q&A

17:00-17:30

Reception

- * Reception is hosted by RCARO
- * Souvenirs will be presented to the audiences during the event



RCA at a Glance

The RCA (Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific) is an intergovernmental agreement among the IAEA Member States that are located in South Asia, South East Asia and the Pacific, and the Far East.



◦ Establishment

1972

◦ Membership

Member States of the International Atomic Energy Agency (IAEA) in the Asia and the Pacific Region. Current membership 22 states.

◦ Objective

To cooperate with each other and the IAEA in the use of nuclear techniques to contribute to the socio-economic development of the members (Government Parties) of the RCA (Regional Cooperative Agreement for Asia and the Pacific).

◦ Thematic Areas

Agriculture, Environmental Protection, Human Health, Industry, Radiation Protection, Energy Planning and others

◦ No. of RCA Projects Implemented

180 (up to 2023)

◦ Number of persons trained in regional training courses

Approximately 14,000.

◦ Financial Resources

Technical Cooperation Fund of the IAEA and the Extra Budgetary contributions of the RCA Government Parties for regional activities, RCA Government Parties for national activities and partner organizations.

◦ Role of the IAEA

To provide financial, administrative, and technical support to the programs and projects of the RCA.

◦ Governance

By National RCA Representatives appointed by the Government Parties at two annual meetings.

◦ Project Implementation

By national project teams functioning under National Project Coordinators, led by a Lead Country Coordinator

◦ RCA website

www.rcaro.org



R C A