

RCA News Letter

THE FIFTH ISSUE | SEPTEMBER 2023

5th Issue of the RCA Newsletter

The 45th Meeting of the National RCA Representatives was successfully held in Sydney, Australia in May with the highest participation of the RCA Government Parties. 21 out of 22 RCA GPs gathered at the meeting to discuss the issues related to the RCA governance and the programme. The main outcomes, follow-up activities and atmosphere of the meeting are captured in this issue. Under the featured articles, several National RCA Representatives, including the Past RCA Chair, provided their insights for the future development of the RCA. After the celebration of the 50th Anniversary, they shared ideas and made suggestions on where the RCA could direct itself to move forward, preparing for the next 50 years. Further, achievements of the RCA project on Non-Destructive Testing, the current status of radiation and nuclear safety in Lao PDR, and an interview of the RCARO/KAIST Masters Programme fellow are included in this issue. ✓

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RCA News

RCA Government Parties convened to enhance RCA governance and its Programme



The 45th NRM, May 2023, Sydney, Australia

Over 60 representatives of the RCA from the Asia-Pacific region and IAEA gathered in Sydney, Australia, to discuss policy and management issues related to the RCA. Hosted by the Australian Nuclear Science and Technology Organisation (ANSTO), the 45th Meeting of the National RCA Representatives was held in May 2023 to review the implementation of the ongoing RCA projects, the development of future RCA projects and various policy issues such as the RCA Medium Term Strategy and the RCA scholarship programme.



Representatives from ANSTO and IAEA

In her opening remarks, Ms Natascha Spark, the newly appointed RCA Chair, commended the IAEA's continuous contribution to social and economic development in the RCA region combined with the strong commitment of the RCA GPs which led to growth in the RCA Programme beneficial for all. In recognition of the challenges faced by the COVID19 pandemic, she was confident that the RCA has

shown resilience and teamwork and will continue to forge ahead in delivering the RCA mandates through collective efforts by the RCA GPs.



Mr Hua Liu, IAEA

Mr Hua Liu, IAEA Deputy Director General and Head of the Department of Technical Cooperation, joined the RCA Chair that the successful implementation of the RCA Programme was only possible through RCA GPs' commitment to address the needs of the region through the peaceful application of nuclear science and technology. He also noted the importance of the NR meetings to analyse and assess RCA governance to bring about comprehensive approaches to further enhance the RCA Programme beyond the 50 years*.

* RCA celebrated its 50th Anniversary in 2022. For more information, please refer to the previous issues on the RCA website.

Reports from the meeting demonstrated that the follow-up activities of the 51st RCA General Conference Meeting (GCM) held in September 2022 had been fully completed. The planned regional activities of the RCA projects were implemented according to the work plan in 2022 and the plan for 2023 was discussed for consideration on hosting activities in the RCA GPs. In preparation for future RCA projects, a total of 6 project designs for 2024-2025 were submitted to the IAEA and RCA GPs agreed to initiate project development procedures for the 2026-2027 RCA Programme.

During the meeting, policy matters were also discussed to enhance the governance of the RCA and its Programme. The representatives reviewed the implementation of the current

2018-2023 RCA Medium Term Strategy (MTS) and the progress of drafting the 2024-2029 RCA MTS. As a means to build up the number of highly educated professionals in the nuclear field in the region, the RCA considered the implementation of the RCA Scholarship Programme. Additionally, the RCARO activities on RCA promotional activities, capacity building and partnership were also reviewed at the meeting.

The Meeting had the highest participation of the RCA Government Parties (GPs) since RCA inception; 21 out of 22 GPs attended the meeting to facilitate the RCA decision-making and enhance regional cooperation. GPs actively exchanged their views and ideas and made suggestions on the specific topics within the agenda. The atmosphere of the meeting was focused, positive and harmonious with the common goal shared by all RCA GPs; addressing the regional issues by nuclear science and technology for the socio-economic development in the region.

As a follow-up of the 45th NRM, the RCA Chairs committee met virtually in July and August 2023 to review the RCA Working Groups, Committees and strategies of the RCA. The RCA Chairs Committee will present its findings at the upcoming 52nd GCM after reviewing various RCA policy documents, working groups and committee establishment plans.



Technical Visit to ANSTO

The 52nd RCA GCM will be held at the IAEA headquarters in Vienna on 22 September 2023, one week prior to the 67th IAEA General Conference. It will review and discuss the follow-up actions of the 45th NRM, implementation of the RCA Programme, project pre-concept documents for 2026-2027 RCA Programme, and reports by the RCA Chairs Committee, Working Groups on MTS, Programme Advisory Committee (PAC) and RCARO. ✓

◆ 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.

Projects

Strengthening Regional Capacity in Non-Destructive Testing and Examination Using Nuclear and Related Techniques for Safer, Reliable, More Efficient and Sustainable Industries Including Civil Engineering (RCA)

Achievements of RAS1022 – RCA Project on NDT

- **Mr Ilham Mukriz Zainal Abidin** | Senior Researcher and Manager, Malaysian Nuclear Agency



Background of RAS1022

Non-Destructive Testing (NDT) has significantly contributed to the competitiveness of the region's manufacturing, service sectors and oil and gas industries. With the rapid progress of the industry and the introduction of more stringent requirements in terms of safety

and economic factors, demand for advanced technology, sophisticated and standardised NDT inspection become more apparent. Aware of the significant social and economic benefits offered by NDT, the RCA has successfully supported participating RCA GPs to undertake considerable activities to strengthen the region's NDT capacity through the RAS1022 project.



RW on the Application of NDT for Civil Engineering Structures, October 2019, New Zealand

With the title 'Strengthening Regional Capacity in Non-Destructive Testing and Examination Using Nuclear and Related Techniques for Safer, Reliable, More Efficient and Sustainable Industries Including Civil Engineering (RCA)', the RAS1022 project is built upon the common interest and problems identified by the RCA GPs which aims to enhance competencies for optimised application of NDT to

the industries through advanced technology and standardised NDT implementation. In achieving this goal, focus has been given on the advancement of participating GPs in 1) advanced NDT technology; 2) NDT for civil structures; and 3) harmonization of NDT personnel certification. 21 RCA GPs i.e. Australia, Bangladesh, Cambodia, China, Fiji, India, Indonesia, Japan, Lao PDR, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, Sri Lanka, Thailand, and Viet Nam, participated in the 4-year RAS1022 project, which began in 2019 and completed in 2022.

Capacity building in advanced NDT provides the industry with an optimised and efficient inspection performance to enhance their existing inspection programme. Focus on civil structure inspection supports the requirement for NDT in response to the increasing occurrence of natural disasters in the Asia and Pacific region. As the certification of personnel is also one of the elements in NDT quality assurance, effort has been geared to harmonize the certification of NDT personnel among RCA GPs, complying with global requirements. With the objective of improving the regional capabilities in the application of NDT, the successful implementation of the project has provided benefits to all participating RCA GPs.

Project activities and implementation

The involvement of relevant stakeholders participating in RAS1022 activities has been crucial and strategically important. The strong and strategic linkage between National Project Coordinators (NPCs) with their respective National Certification Body for NDT, NDT society, and NDT training centres has ensured the sustainability of the project and successful implementation of the activities for achieving the project objective and outcome. The deliverables and sustainability are directly attributed to the combined efforts of the NPC, national project team, stakeholders and the monitoring agencies of the RCA GPs. Regular communications between the Project Management Officer (PMO), Technical Officer (TO), Lead Country Coordinator

(LCC) and NPCs have been shown to be crucial to the effective coordination and implementation of activities.

The planned activities for RAS1022 throughout the project duration covered 5 Regional Training Courses (RTC); 5 Regional Workshops (RW); 1 Expert Group Meeting (EGM); and 2 Meetings (ME). Fig. 1 below provides an overview of the activities and their scheduled implementation.

Implementation	<p>2019 (1 RTC, 2 RW)</p> <ol style="list-style-type: none"> 1. RW on NDT/E qualification and certification system requirements in accordance with the latest edition ISO 9712 and ISO 17024 2. RTC on RT-D Level 2 for personnel already certified to RT-F Level 2 3. RW on the application of NDT for civil engineering structures 	<p>2020 (2 RTC, 1 EGM, 1 ME)</p> <ol style="list-style-type: none"> 1. Expert group meeting to review the draft document on PAUT 2. Mid-Term review meeting and participation in WCNDT 2020 Seoul with ICNDT WG1 for NDT of civil structure 3. RTC on Phased Array Ultrasonic Testing (PAUT) (with certification) and Introduction to TOFD 4. RTC on NDT in civil engineering for quality control
	<p>2021 (1 RTC, 2 RW)</p> <ol style="list-style-type: none"> 1. RW on NDT in civil engineering structures during maintenance and post-disaster 2. RTC on the CT in associated with 3D image analysis for industrial components 3. RW on harmonization of certification schemes and participation in APCNDT. 	<p>2022 (1 RTC, 1 RW, 1 ME)</p> <ol style="list-style-type: none"> 1. RTC on DIR Level 3 for certification 2. RW on advances in DR and CT for NDT&E. 3. Final review meeting to assess the achievements and planning of future project
	<p>RAS1022 - 5 RTC, 5 RW, 1 EGM, 2 ME</p>	

Fig. 1: Implemented Regional Activities

Participation of GPs in the planned activities were crucial to the development of regional and national expertise. Having trained personnel through the participation in the activities, consolidated national capacities, and great cooperation between GPs, will ensure the sustainability of benefits from this project. Fig. 2 provides the details of personnel involvement from participating GPs in RAS1022 activities i.e. RTC and RW.

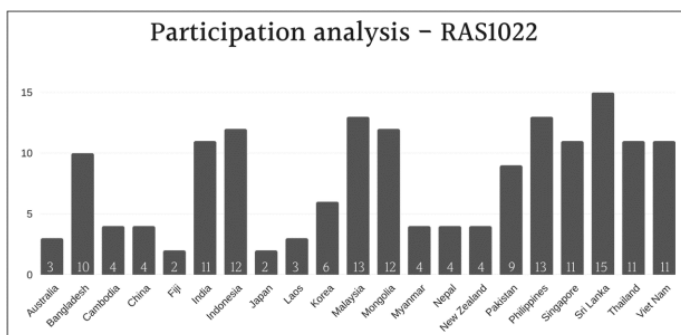


Fig. 2: Number of personnel from participating GPs that participated in the RTC and RW under RAS1022

It is intended that the pool of trained personnel created directly by this project through the implemented activities will work as the focal resources for the GPs. They in turn will generate a new pool of NDT personnel through their

national programme and activities. As a result, the number of practitioners will be increased, technology will be readily available in the country, new private companies will be established, employment opportunities will be increased, and dependency on foreign expertise will be eliminated. The technology and benefits will be sustained in the country.



RTC on RT-D Level 2 for Personnel Already Certified to RT-F Level 2, June 2019, Malaysia



Regional Workshop on Advances in DR and CT for NDT&E, September 2022, Indonesia

RAS 1022 notable achievements and contributions

The success rate of RAS1022 can be analysed from the Performance Indicators been set for the project. Fig. 4 provides a summary of the achievements in realizing the targeted outputs for the project.

Despite the challenges and limitations provided by the Covid-19 pandemic, the project has managed to trained personnel exceeding the indicators of the targeted outputs for the project. The determination and ability of RCA GPs to continue to implement activities at the national level during the pandemic period has really supported the progress and achievements of the outputs and outcome for RAS1022.

From the assessment of the achievements and implementation of activities of RAS1022, it can be concluded that the project has been very successful and achieved its intended objective and outcome. The implementation of its activities at the regional, and subsequently at the national level, has provided benefits to all participating RCA GPs.

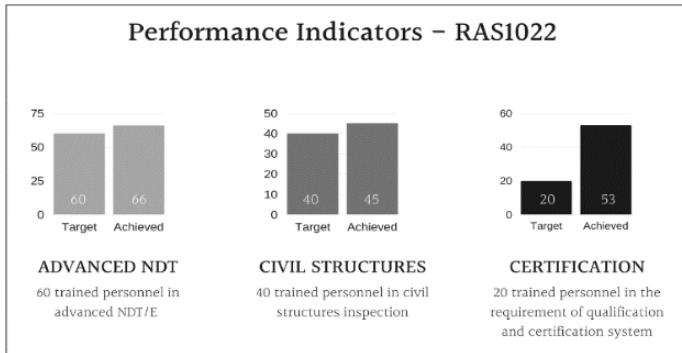


Fig. 4: The achievement against the performance indicators set for RAS1022

In summary, the RAS1022 project has contributed to:

- i Training 66 personnel in advanced NDT, 45 trained personnel in NDT for civil structures inspection, and 53 trained personnel in the requirement of NDT qualification and certification systems, exceeding the targeted indicators set for the outputs for the project;
- ii The overall improvement in regional capabilities in the application of NDT by providing training courses with ISO 9712 certification which allows GPs to produce competent (qualified and certified) personnel in advanced NDT technique i.e., RT-D, which enable GPs to contribute to enhanced inspection efficiency and productivity across industries;
- iii The enhancement of regional capabilities in the application of NDT by providing training in NDT for civil structures inspection which will allow GPs to develop their capacities and capabilities for improved safety of buildings and structures, pre- and post-disasters;
- iv The ability of GPs to produce certified personnel locally through the establishment of national certification bodies and international recognized certification schemes for NDT and training centres, enabled GPs to fulfil the demands of industries and be self-reliant in NDT. Currently 7 national certification bodies for NDT from participating GPs have fulfilled the requirements of the International Committee for NDT (ICNDT) and the Multilateral Recognition Agreement (MRA); and
- v The expansion of NDT activities and businesses at the national level in GPs through availability of trained and certified personnel as reported by the NPCs, which provide socio-economic benefits to GPs.

It is hope that the success of RAS1022 will be replicated or further enhanced in terms of effectiveness in the follow-up project, RAS1029 - Enhancing Regional Capabilities in Advanced Non-Destructive Testing Techniques for Improved Safety and Inspection Performance in Industries (RCA), which commences in 2023. ✓

Featured Articles



Insights for Future Development of the RCA: Preparing for the Next 50 Years

After the celebration of the 50th Anniversary, the RCA is looking ahead to the directions and strategies for further development in the next 50 years.

National RCA Representatives including the Past RCA Chair share their ideas and suggestions on how the RCA could direct itself to move forward from the practical to the governance level.

We appreciate their contributions for providing a fundamental ground to initiate and facilitate strategic thinking for RCA stakeholders.



Insights: Past and Further Development of RCA

- **Dr. Tran Chi Thanh** | Former RCA Chair, National RCA Representative of Viet Nam, President, Vietnam Atomic Energy Institute



Abstract: The Regional Cooperation Agreement (RCA) has undergone a long history of development. In the last 50 years, the RCA has significantly promoted cooperation of Nuclear Science and Technology (NST) in the Asia-Pacific region with outstanding achievements of socio-economic

development gained in Government Parties (GPs). To make a more dynamic, effective and efficient RCA after the next 50 years, we need to further strengthen cooperation among GPs. Completing the role of 2022-2023 RCA Chair in May 2023, Viet Nam is trying to share insights and views of solutions for bringing the RCA to a higher level of cooperation.

An overview of 50 years of RCAs

Under the auspices of the IAEA, the RCA (Regional Cooperative Agreement) has played a key role in enhancing socio-economic well-being and contributing to the sustainable development of the Asia-Pacific region for the past five decades. As the first of the IAEA's regional agreements, the RCA has blossomed from just a group of four founding members in 1972 to 22 Member States with tangible successes through a concerted and sustained effort. Through more than 170 RCA projects, 10,000 counterparts have been trained in over 650 regional training courses. In addition, more than 4,500 experts and lecturers have shared their expertise, experience and skills for the safe, effective and efficient use of nuclear technology to end-users. Within well-designed and properly implemented RCA programmes, profound achievements and success stories have been gained as strong examples of regional cohesion and cooperation. To celebrate the 50 years of RCA, social and economic impact assessments of RCA programmes in the field of mutation breeding, radiotherapy, and non-destructive testing have been conducted as a regional initiative with impressive outcomes.

- *In mutation breeding, 7,300 breeding lines with superior quality traits have been created, and more than 250 mutant varieties of crops certified and released.*
- *In radiotherapy, the radiotherapy specialist workforce has increased by 230%. This has helped improve local tumour control rates from 39% in 2000 to 55% in 2020, and cancer survival rates from 38% in 2000 to 51% in 2020.*

- *In non-destructive testing (NDT), more than 3,600 inspection centres and 190 firms have been established, supporting the application of NDT technology in quality assurance and control of industrial components in multiple industrial sectors across the region.*

It was such a great honor for Viet Nam to lead the RCA through its 50th anniversary when the first RCA Ministerial Level Meeting was held in September 2022 with the delivery of the RCA Vienna Ministerial Declaration. At the meeting, the IAEA Director General (DG) Rafael Grossi congratulated the success of the RCA for the past 50 years and looked forward to a further effective and efficient RCA for the next 50 years onwards. "The RCA has 50 years of experience; let us commit for another 50 years and for generations to come," the DG said.

Insights gained and the way forward

The RCA Ministerial Declaration re-affirms all Government Parties (GPs)' strong commitment to promoting the peaceful application of nuclear science and technology to address existing and emerging challenges in adapting to global challenges. For further development of the RCA in the next decades, it is crucial to analyze and assess the current mechanism of RCA with its strengths and weaknesses, and opportunities and challenges, from which the way forward will be shaped. Each GP needs to renew their efforts to contribute to the continuing success of the RCA programme and put the RCA Declaration into practice efficiently and effectively.



RCA Ministerial Conference, September 2023, IAEA

In an effort to reinvigorate the RCA, it is important to enhance the role and contribution of the Committee of RCA Chairs "TROIKA" by directing and planning the RCA activities in the manner of grace, determination and purpose. As a follow-up of the Ministerial Conference, the RCA Chairs Meeting was held in Da Nang, Viet Nam for

the first time, from 27 Feb – 02 March 2023, to discuss and propose action plans for deployment and execution of the RCA Declaration Vienna 2022. At the meeting, five key issues under the RCA were reviewed, namely RCA governance; Research & Development; Technology Transfer/Diffusion of Proven Nuclear Technologies; Nuclear Human Resource Development; and Partnership & Resources Mobilization. The results and recommendations to deploy the RCA Declaration were submitted to the 45th RCA Regional Meeting of National Representatives, 08-12 May 2023, for further consideration and decision.



RCA Chairs Meeting, March 2023, Viet Nam



44th NRM, April 2022, Virtual

Over the past five decades, the RCA has successfully promoted human resource development by enhancing regional capability and capacity in the application of nuclear science and technology through short-term training activities. On the way forward, it is crucial for the RCA to replicate the successes of the past and foster future achievements with a long-term nuclear human resource development programme for the sustainable development of all GPs.

RCA Scholarship Programme

The RCA is a specific region where the levels of NST are different from country to country. While several countries such as Japan, South Korea, Australia, India, and China hold advanced NST, in the other countries, particularly least developed countries and small island developing countries,

the levels of NST are modest. Due to this reason, human resources relevant to NST for many countries are critical.

In light of the benefits that a long-term training programme could bring to the region in strengthening human resources and achieving sustainable development, the proposal of setting up the RCA Scholarship Programme was firstly raised by the RCA Focal Person of the IAEA at the 43rd RCA NR Virtual Meeting in April 2021. At this meeting the Committee of the RCA Scholarship Programme (SPS) was established to develop further details and undertake an in-depth study of the programme. However, at the recent 45th NRM, a consensus was not reached on the proposed scholarship programme and its pilot phase (2023-2026) due to strong concerns from some GPs on resource mobilization for such a long-term program (after 2026) and the sustainability of the programme. As the Chair of the SPS Committee, Viet Nam continues to encourage GPs to reconsider the critical issue and have a strong commitment to the sustainability of the RCA. The pilot phase would be a significant step to the sustainable long-term programme, as it will provide valuable data and experiences from GPs for the in-depth feasibility study of the further long-term RCA scholarship program. It is worth noting that the pilot RCA scholarship program is feasible in terms of financial support, and will be most needed and beneficial for the least-developed countries. Clearly, there is a need.

In a review of ongoing cooperative activities among the RCA GPs in terms of research and development (R&D) and technology transfer, the proposals of establishing a Network of National Nuclear Research Institutes (NNRIs) of the RCA GPs and a forum on Technology Transfer/Diffusion of proven nuclear technologies under RCA have been reported at the 45th NRM. With the efforts to deploy the RCA Declaration 2022, all GPs are expected to review and make decisions on the initiatives for shaping the future outcomes of the RCA.

Establishing and operating a Network of National Nuclear Research Institutes (NNRIs) of the RCA GPs

Due to limited project funds, given the majority of RCA GPs are developing and least developed countries, the RCA programme placed the highest priority on building the capacity of the GPs to apply existing technologies, and less to the R&D component. In light of the common concern of the RCA community emphasizing the importance of research as an essential part of the RCA Programme activities, R&D in the field of nuclear science and technology should be further facilitated in order to enhance the national and regional technological capabilities to address emerging challenges. It is a fact that RCA has not attached the importance of collaboration in R&D among NNRIs in the region over the

last 50 years. The question here is how to address the vital issue on the way forward.

The objective of the NNRI network is to contribute to enhancing the sustainability and resilience of the region by creating an R&D innovation ecosystem for building stronger nuclear technology capability of the RCA GPs. An R&D innovation ecosystem is a collaborative concept of interconnected diverse stakeholders, including researchers, national and special research institutes, government agencies and end-users, as well as other resources, working together on common R&D projects and topics to generate and disseminate innovative technologies. It serves as a platform for the stakeholders to exchange information and knowledge, leading to the generation of new ideas that can address societal challenges and drive economic growth.

Any NNRI of the RCA GPs (preferably a national research institute representing the GP) could be a member of this network on a voluntary basis. Under the network, an updated database, an “Integrated Information System”, at the national level of nuclear techniques in RCA GPs will be set up. The network will continually seek possibilities to invite or engage with RCA Regional Resource Units (RRUs) and IAEA Collaborating Centres as a means to enhance the efficiency of its activities. As an active facilitator of the regional cooperation, RCARO will perform as the secretariat providing financial support to the network in organizing networking events, operating the online platform, and other activities for the network, subject to its budget availability.

Establishing a forum on Technology Transfer/Diffusion of Proven Nuclear Technologies under the RCA

Under the RCA Programme, efficient use of nuclear and related techniques has been a basic requirement to implement activities such as training, expert missions and specialised equipment utilisation to ensure effective technology transfer. In consideration of the current mechanism, it can be seen that the focus of the RCA is to enhance regional cooperation among the GPs by facilitating technology transfer through Technical Cooperation among Developing Countries (TCDC) and partnership programmes.

TCDC and partnership activities are implemented in various forms such as expert missions; hosting of training events; provision of services; provision of funds (EBT); and volunteering to become a Regional Resource Unit (RRU). However, the provision of services from developing countries (DC) to DC and the operation of RRUs is still limited.

The Technology Transfer/Diffusion Forum under RCA will be a regional platform that brings together a wide

range of stakeholders from policy makers to end-users to disseminate the advantages of the proven technologies and their applications developed by the RCA. Under the forum, mechanisms will be established to develop a model package of the proven technologies and to promote technology diffusion activities to the private sector for effective technology transfer.

In order to make this initiative possible, it is necessary to have proactive support and participation of the GPs, particularly from advanced countries, by leading/chairing the forum. Viet Nam suggested that Japan could be a leading country for establishing the Forum on Technology Transfer/ Diffusion of Nuclear Technologies.

Concluding Remarks


During the Chairmanship of the RCA in 2022, Viet Nam has made its best effort to enhance the RCA’s cooperative activities and contribute to further development of nuclear science and technology in the region. The RCA had its first ever Ministerial level Meeting in September 2022 and adopted the RCA Declaration, reaffirming the commitment and ownership of the RCA GPs. Various meetings and activities were organised engaging the RCA GPs, IAEA and relevant experts to make the high-level meeting possible and draft the declaration.

Particularly, after careful investigation the RCA Scholarship Programme was suggested to initiate a pilot phase for 3 years for nurturing young professionals in the nuclear-related fields in the region.

In the context of meeting regional challenges, RCA may need to explore innovative solutions and make concerted efforts by all GPs with a spirit of strong ownership and leadership to address regional challenges effectively, leading the pathway of the global nuclear community.

The last few years’ experience in the RCA allowed Viet Nam to better understand the RCA and the importance of the support of the GPs. Viet Nam re-affirms its commitment and strong support to contribute to the successful advancement of the RCA and looks forward to more innovative initiatives from the GPs to make the RCA more effective, efficient and dynamic moving forward.

References

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2. Concept paper to organize a forum on Technology Transfer/Diffusion of Proven Nuclear Technologies under the RCA, prepared by Viet Nam
3. <https://www.iaea.org/newscenter/news/rca-recognizes-key-achievements-with-awards-on-50th-anniversary> 

50 years of Success of the RCA: What Next?

- **Ros Intan Purbasari, Muhayatun Santoso, and Totti Tjptosumirat (from the left)** | National Research and Innovation Agency (BRIN), Indonesia



Current state

The RCA was founded in 1972 under the auspices of the IAEA. Fifty years of age of an organization shows its ability to carry out tasks and functions in realizing the ideals established at the formation of the organization. At the age of 50 years of RCA, there have been many activities carried out that have a positive impact on RCA member countries, details of which can be found on the RCA website (<https://www.rcaro.org/newsletter>), and further reports on successes that are inextricably linked to the use of nuclear technology, and the role of the RCA, can be accessed at the <https://www.iaea.org/sites/default/files/20/11/tc-journey-to-success-ap.pdf>. In the report, the RCA in representing Asia-Pacific member countries, has proven its ability in utilizing nuclear technology for human benefit in various fields, namely Health, Food, Environment, Industry, and Nuclear Safety and Energy.

In the first 50 years, through the IAEA's Technical Cooperation program with 22 member countries in the Asia Pacific region, the RCA has proven its participation in tackling global problems listed in the SDG targets by providing support in thematic priority programs such as radiation security; health and nutrition; food and agriculture; energy; development and management of nuclear knowledge; water and environment; industrial applications; and radiation technology. Currently, these programs include vital areas, namely cancer treatment (through the IAEA Rays of Hope program), food improvement (increasing rice variety variability with radiation mutation techniques), mitigating plastic waste problems (in the IAEA NuTec for Plastic program) and handling air pollution, and anticipating infectious diseases (through the IAEA ZODIAC program), which are ongoing. Through the framework of understanding under the auspices of the world nuclear organization, the IAEA, RCA's activities have also received support from various developed countries, with contributions in the form of

community partnerships and extra-budgetary funds from other donors, who are very concerned with the aforementioned thematic programmes.

The RCA, with the support of the IAEA, has succeeded in encouraging the development of human resources for the safe, effective and efficient utilization of nuclear technology in support of reaching sustainable development goals. Further, the RCA has successfully promoted human resource development in the region for the past five decades. More than 170 RCA projects have enabled the training of 10,000 counterparts through over 650 regional training courses. In addition, more than 4,500 experts and lecturers have been recruited to provide expertise, experience and skills on nuclear technology utilization. Several success stories in various fields have been published by RCARO (<https://www.rcaro.org/success>), including improving human health using nuclear medicine technology and radionuclide therapy; improving air quality in the Asia Pacific-Region through collaborative and sustained efforts; improving nuclear medicine and radiation oncology services through e-education; enhancing regional capability in using innovative radiotracer and sealed source techniques for investigation of complex industrial systems; establishing a benchmark for assessing nuclear impact on the marine environment; and building self-sustainability and self-reliance in radiation protection infrastructures.

RCA Members

Within the framework of IAEA Technical Cooperation, RCA member countries are countries located in the Asia-Pacific region. To date, there are 22 RCA member states (Australia, Bangladesh, Cambodia, China, Fiji, India, Indonesia, Japan, Republic of Korea, Laos, Malaysia, Mongolia, Myanmar, Nepal, New Zealand, Pakistan, Palau, Philippines, Singapore, Sri Lanka, Thailand and Viet Nam) constituted by formal intergovernmental agreements that serve as a framework for Asian Member States to intensify their collaboration through IAEA programs and projects that focus on the specific shared needs of their members and to promote and coordinate cooperative research, development, and training projects in nuclear science and technology.

RCA Administration Management

Under the framework of IAEA TC, in some important ways, many countries provide support for RCA's activities as donor countries and also received support from Community Partners. The implementation of the RCA Programme refers to several documents, namely: the RCA Agreement;

the RCA GOR (Guidelines and Operating Rules), updated October 2022, as a reference guide used by National RCA Representatives and other RCA stakeholders; Guidelines for the Planning and Design of the IAEA 2024–2025 Technical Cooperation Programme; and the Regional Programme Framework (RPF). The latter two documents are updated every 5 years and serve as the foundation for the RCA's activities programme. To assist with the administrative processes that occur in the RCA, the Republic of Korea offered to become RCA's Think-Tank, later developing into a Regional Office for the Asia-Pacific region, better known as RCARO (RCA Regional Office). This received positive responses and appreciation from RCA member countries.

For implementation of RCA activities, the RCA elects the Chair of RCA, usually the National Representative from one of the 22 RCA GPs in alphabetical order, assisted by Rapporteurs, and for program determination, the RCA is assisted by support committees, namely the Programme Advisory Committee (PAC) for matters related to RCA programme development and Standing Advisory Committee (SAC) to give advice on RCARO activities. All elements of the RCA are coordinated by the IAEA Secretariat, in this case the Department of Technical Cooperation. Projects proposed by a member state must meet the following requirements: in accordance with the RPF, a priority topic in the country of origin, a related continuation from previous projects, and it must have an impact in alleviating problems at the regional level.

In order to agree on the implementation of the program, the theme of the program of activities to be carried out is discussed in the SAC and PAC forums, then used as an agenda in the mid-year National Representatives forum, to be subsequently prepared as a program of activities in the RCA General Conference forum which is held annually and attended by state representatives at the ministerial level (or those who represent) and National Representatives (NR) of Member States.

Future implementation of RCA

The RCA program in the future will refer to the IAEA program and the needs of the region, in particular for the development of human resources and the use of appropriate and safe nuclear technology and related technologies needed to address food insecurity, poor quality food including malnutrition, climate change, water scarcity, increasing public health demands, transboundary outbreaks of pests and invasive animal and plant diseases, deterioration of soil fertility, increasing pollution, and the continuing loss of biodiversity for agricultural production.

Project proposals are aligned with the priority topics in the RPF and are proposed by a Lead Country (LC). The project must be relevant to the region, have achievable objectives, deliver results in an efficient manner, and have a long-lasting positive impact. Projects are initially introduced at the NR meetings, at which the NRs agree on which projects should be developed based on their potential to strengthen capabilities in the region. The determination of the LCC does not have to be based on the largest donor country.

Each RCA member country has its own policy in implementing the RCA program and assigns personnel who will be responsible as NRs. If the process of replacing NRs and identifying country priority programmes is not sustainable, it will mean that the implementation of RCA programmes will not be able to have a meaningful impact on member countries. Anticipation needs to be established in the RCA GOR, which adds the requirement for the handover process of the old NR to the new NR with supporting documentation. The replacement of the NR needs to be preceded by an understanding of the RCA programme that the newly appointed/assigned NR will be responsible for implementing, as well as an understanding of the RCA programme that will have an impact on the Asia-Pacific region in general and Member States in particular. Routine annual or biannual based workshops for orientation for newly assigned NRs and assistants, and as a refresher for experienced NRs, could be provided to help acquaint and remind NRs of their responsibilities to the RCA programme. The RCA GOR could also be reviewed during the workshops to help the GOR to remain relevant and up to date.

The current implementation of RCA projects was proposed at least 3 years in advance. The process of developing projects is carried out in distinct stages. In order to increase the impact and benefits of RCA projects, and to anticipate emerging issues within the Asia-Pacific region, it is recommended that the staged approach of project development be accelerated.

The development of RCA projects is expected to be more effective in the future compared to the current 3-year staged process (Figure 1). The RCA Chair and PAC play critical roles in making recommendations for projects that can be implemented in a timely manner. Increasing the frequency of PAC meetings is expected to be the key in establishing projects that are ready for prompt implementation. The use of face-to-face and virtual meeting systems provide opportunities for immediate implementation of the final findings of the PAC. The role of the IAEA Secretariat in this regard is crucial. As stated in RCA GOR 2018 (updated 2022), the project selection process can be carried out within three years with a predetermined timeline (Figure 1).

The evaluation of the RCA programme is an objective, independent and systematic examination of the extent to which a programme or project has achieved its stated objective and, therefore, is meeting the needs and priorities of member countries. Annual or biannual evaluation is carried out during project implementation. Projects may be extended under exceptional circumstances and if agreed upon by the NRs. The current evaluation is based on the report, which contains information on the status of achievement of project outputs and the outcomes against the targets given in the Logical Framework Matrix (LFM) of the project.

Reports related to the longer-term socio-economic impact of the projects, which is a long-term goal, based on the outcome of the projects meeting sustainable development priorities of each GP, should be carried out. A database should be established for recording the outcomes of RCA projects during the implementation stage. Long term impacts and benefits of projects could be summarized through the annual-based reporting by the LCCs

Conclusion

Over the past 50 years, the Asia-Pacific Region and member countries have benefited enormously from the RCA program, as stated in many IAEA publications on the implementation and impact of the program. The RCA GOR was initiated and has undergone several stages of improvement and is an important reference document in developing RCA projects.

The role of NRs in reaching an agreement on an RCA project is important and must always be improved. To avoid loss of information of the implemented RCA project, which tends to cause loss of impacts and benefits to the region, the process of; (1) reassignment of NR by RCA member country is suggested to follow a succession process; (2) electronic recording of the implementation of RCA projects should be established; and (3) knowledge management related to the RCA GOR should be conducted.

Annual or biannual workshops for new NRs would help sustain continuity of the RCA program. Change of NRs can

/ RCA GOR 2018 (updated 2022)

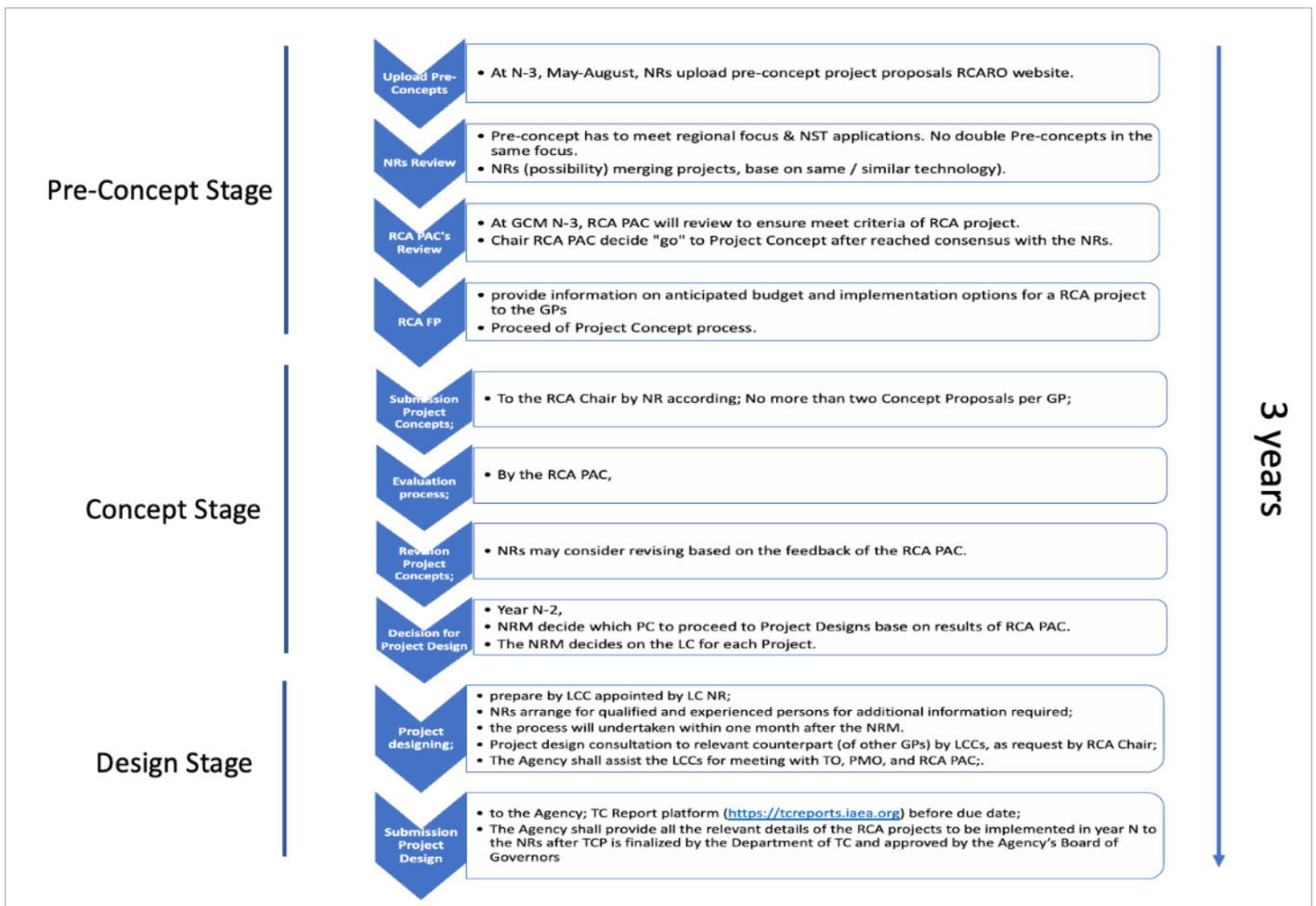


Figure 1. Procedure for development of the RCA projects supported by Technical Cooperation Programme of the Agency (RCA GOR 2018 (updated 2022)).

affect the rate of implementation of projects. The workshops would serve as a refresher program for new / current NRs on the process of proposing, determining, implementing, monitoring and evaluation of RCA projects. The current RCA GOR could also be discussed in the workshops to determine its effectiveness, and if deemed necessary, could be revised. ✓

Perspective for Way Forward

- **Mr Chadraabal Mavag** | National RCA Representative of Mongolia Head, Nuclear Technology Department, Nuclear Energy Agency



Since its establishment, the Regional Cooperative Agreement celebrated its well-deserving anniversary for the first half-century last year, honoring the contributions made to nuclear science and technology in the socio-economic and human development particularly in the

fields of food, agriculture, health, industry, environment and others through implementation of the various projects and assistance from the Agency in the Asia-Pacific region. Besides the strong support of the RCA-related organizations, acknowledgement of the Government Parties, National Representatives, Coordinators, and other stakeholders' cooperation and commitment of all concerned is a must.

For more efficient implementation of RCA projects, it is vital to pay regard to the challenges to the RCA as the world advances at a rapid pace, as well as emerging opportunities. It is crucial to concentrate on improving the RCA's governance to implement the agreement, which includes reforming pertinent legal regulations, increasing cooperation between member states, bolstering research and development organizations and public-private partnerships, and increasing funding from new sources, in addition to focusing on the widespread use of technological advancements to resolve issues.

In order to more consistently and effectively implement and utilize the advancements in nuclear science and technology, collaboration could be expanded across the Asia-Pacific region. Establishing a joint working group within the IAEA's activities is specifically appropriate for tasks involving regular experience and information sharing between the ARCAL, AFRA, and ARASIA agreements, the introduction of nuclear technology, joint research and development, and furthering collaboration with other organizations that carry out related tasks like the FNCA and NEA, among others.

Due to the differences in the institutional infrastructure, technical capability, and human resources of member countries' institutes, conducting joint research in the field of nuclear technology and the introduction of new technologies are relatively challenging. On the other hand, the differences in the level of development of nuclear technology in the

countries of the region are the reason for the regional cooperation and the way to overcome them is through active cooperation by providing in-kind assistance and human resource capacity building. The involvement and active participation of developed nations is crucial to finding a solution.

It is also necessary to identify potential partners by promoting the achievements of nuclear science and technology. In other words, promoting the benefits to the public and decision-makers by conducting specific studies on contrasting the advantages of nuclear methods in problem-solving, and opening up the possibility of using them in combination with other technologies, would be helpful to identify potential partners and financiers. Also, promotion of the results of the studies and the advantages of working in the nuclear sector would be valuable to make the general public more aware and interested in nuclear technology in the region as part of preparing young workers in the nuclear sector.

For the National RCA Representatives (NRs), there are two factors to consider: coordinating the implementation of the RCA internally within their respective countries; and actively cooperating externally with other NRs to contribute to regional issues.

With regard to internal considerations, governments should take specific measures to strengthen and improve the working conditions and environment of NRs to ensure the implementation of the Convention.

According to recent statistics, it is crucial to provide adequate working conditions and, more importantly, the opportunity for them to work steadily. From a practical standpoint, the rights and obligations of the NRs should be reflected in the relevant laws and regulations of the member states.

As a part of their responsibility to implement the RCA agreement, NRs should improve cooperation, structure and operation with internal organizations and institutions to create synergy through bilateral cooperation implemented with partners in similar fields, in accordance with the country's distinctiveness. It is also worth mentioning the complementarity of activities of NLO, NLA and NR in the implementation of all programs and projects.

The concern of nuclear science and technology policy has been fully and effectively addressed for Mongolia. In other words, the NEC serves as the primary coordinator for the nuclear industry's initiatives and programs that will be carried out within the framework of the IAEA and other

international organizations and are supported by policy. The initiatives of the TC program, the RCA, and the Forum for Nuclear Cooperation in Asia (FNCA) in this context are coordinated and synchronized, and the project and program participating organizations are given unified policies and rules. In this context, the NEC coordinates the projects of the TC program, the RCA, and FNCA, and provides unified policies and guidelines to its counterparts. The advantages of implementing initiatives have expanded as a result, and cooperation between regional organizations has been improved. For instance, the use of linear accelerators in cancer treatment has significantly advanced in the realm of human health and innovative IMRT and brachytherapy techniques have been established by integrating the efforts of the TC program, the RCA, and the FNCA projects in the health sector, and new varieties of crops have been developed in the agricultural industry.

The success of the projects depends on the NRs' ability to actively learn from the past experiences of other National Representatives while also thoroughly understanding the RCA agreement and regulatory acts. Regular meetings are important to monitor project progress, to hear from stakeholders on how to improve management and implementation, and to find solutions to issues raised.

Cooperation is an essential component. The NRs of the Government Parties' collaboration and understanding is particularly crucial for the implementation of the Agreement. Generally speaking, the enthusiasm, commitment, and initiative of NRs are vital for the nation's engagement. ✓

Articles by GPs

The Current Status on Radiation and Nuclear Safety in Lao PDR (Part 1)

- **Ms Phanousone PHOUYAVONG** | Deputy Director of Office Radiation and Nuclear Safety Office, Department of Science, Ministry of Education and Sport, Lao PDR



Overview

This document describes the overview of the current status on radiation and nuclear safety in Lao Democratic Republic (Lao PDR), and also the implementation, challenges, and action plan in the future.

Lao PDR is located in Southeast Asia in the heart of the greater Mekong sub-region. The country is the only landlocked country of the six Greater Mekong Subregion (GMS) countries, sharing borders with Cambodia, China, Myanmar, Thailand and Viet Nam. Its total area is 236,800 km². The current population is approximately seven million.

The Radiation Protection and Safety Law was enacted in 2019. In 2025, the Lao government has a plan to conduct a review of the existing Law to assess if nuclear security and safeguard provisions are adequately addressed and will prepare amendments if necessary.

We do not have specific regulations or legislation to implement the existing law on radiation protection and safety. The Radiation and Nuclear Safety Office (RNSO) has been drafting the regulations on radiation control and a ministerial declaration for effective implementation of the law itself.

There will also be a long term action plan to create the decree on regulatory authority for radiation protection and safety; to establish the national steering committee on nuclear safety and security and The Technical Coordinator Authority for Radiation Protection and Safety; and to Integrate the development of the national response plan for nuclear security events into the existing national emergency management system to ensure that the plan is coordinated with, and complements, other emergency plans.

Regarding the technical cooperation with the IAEA, we have signed the 2nd country programme framework (CPF) for technical cooperation in 2020-2025.

For the implementation of radiation and nuclear safety in Laos, we have the RNSO which is under the Department of Science (DoS), and acts as regulatory authority to control, monitor and ensure that licensees comply with national and international standards for safety and security.

RNSO was established in 2018 under the Ministry of Science and Technology (MOST). In 2021, the Lao politburo of the central committee party issued the resolution on transferring the science sector to the Ministry of Education and Sports (MOES), accordingly in April 2021, the RNSO moved to the MOES officially. Afterwards, the Prime Minister has issued the decree on the roles and responsibilities of MOES, including the Department of Science in the Ministry's structure.

Laos joined the IAEA as a Member State in November 2011, appointing MOST in the role of national authority for radiation safety. In accordance with the rights and duties under Degree No.0633 of the Prime Minister of Lao PDR, the Ministry of Education and Sports is one of the main ministries focused on Research and Development in line with meeting the national development goals, as well as identifying the medium- and long-term strategic objectives to be implemented. Its function includes the establishment of a regulatory body and the promotion of peaceful uses of radiation and nuclear technology. Laos became a signatory to the RCA in 2017 and joined the ASEANTOM in 2015. In terms of international obligations, Laos is a signatory to most, but not all, of the international legal instruments and conventions relating to radiological and nuclear materials.

Currently, there are no nuclear power reactors or nuclear fuel cycle, nuclear medicine, or irradiator facilities in Laos. However, alternative techniques have been used in the medical sector and radiation application techniques have been used in the industrial sector. The establishment of a functional regulatory infrastructure for radiation safety and for the control of radioactive sources are essential in the application of nuclear technology promoting socio-economic development.

Based on existing information, Laos stores no nuclear material. However, the technical point of contact, the Ministry of Educational and Sports, is conducting a national survey for drafting the national inventory.



Signing of CPF, Dec. 2020, IAEA

In addition, we have bilateral agreements with the IAEA, The Ministry of Education and Sports of the Lao PDR, and the Ministry of Science and Technology of Viet Nam (MOST Vietnam) in the area of strengthening south-south and triangular cooperation of the IAEA technical cooperation programme. There is also a MOU between Ministry of Science and Technology of Lao PDR and the Office Atom for Peace of Thailand (OAP, Thailand).

Laos has identified six national priority areas over a 5-year term such as Legal framework, Nuclear and radiation safety and security, Food and agriculture, Human health and nutrition, Water resource and environment, and Energy and industry, in preparing for further development of the country.

More information on the analysis of radiation safety status of specific sectors in Lao PDR; Industry, Environment, Human Health, Agriculture, etc. will be provide in the next issue. ✓

What's More

The 15th Vietnam Conference on Nuclear Science and Technology (VINANST-15)



The Vietnam Conference on Nuclear Science and Technology (VINANST) is held every two years and is an important event in the research, deployment, and application activities of nuclear energy in Viet Nam. The conference is a place for both Vietnamese and foreign scientists and experts to meet and exchange new research results and applications in the field of nuclear science and technology. In particular, the conference is an opportunity for young Vietnamese researchers to exchange and learn more professional knowledge as well as other practical skills.

Since 1996, with the permission of the Ministry of Science and Technology (MOST), the Vietnam Atomic Energy Institute (VINATOM) has successfully organized 14 national conferences on nuclear science and technology. This year, according to the plan, the 15th Vietnam Conference on Nuclear Science and Technology (VINANST-15) was held in Nha Trang city for 3 days from August 9 - 11, 2023. This VINANST-15 conference is organized by VINATOM with a large scale and regional scope. Therefore, the conference has attracted the participation of many experts, scientists, managers of ministries, agencies, localities, universities in the country, and international delegates who are renown

professors and experts from countries with advanced nuclear science and technology. About 70 domestic and international organizations participated in the conference with nearly 450 delegates who are scientific researchers from science and technology organizations, education and training institutions, managers from relevant ministries, agencies, localities across the country, graduate students and students of universities.

VINANST-15 has selected 195 reports, including 127 oral presentations at technical sessions and 68 posters through serious review by scientific councils.

This conference includes one plenary session and seven technical sessions focusing on the following topics:

- **Session A:** Nuclear Power Development and Human Resources Training (Nuclear Power Technology and Design, Reactor Physics, Nuclear Safety, Nuclear Human Resources Development).
- **Session B:** Nuclear Physics, Nuclear Data, Accelerators, and Nuclear.
- **Session C:** Radiation Measurement, Radiation Safety, and Environmental Monitoring.

- **Session D1:** Applications of Radiation Technology and Nuclear Techniques in Healthcare.
- **Session D2:** Applications of Radiation Technology and Nuclear Techniques in Industries and others
- **Session D3-D4:** Applications of Radiation Technology and Nuclear Techniques in Agriculture.
- **Session E:** Radiochemistry and Nuclear Chemistry, Nuclear Fuel Cycle, Nuclear Material Science and Technology, Radioactive Waste Management.

On August 9, the conference plenary session featured 21 presentations by invited speakers who are leading scientists and experts from research institutes, universities, hospitals and reputable organizations in the field of atomic energy in Viet Nam and abroad.

At the plenary session, Dr. In Cheol Lim, Executive Vice President of Korea Atomic Energy Research Institute (KAERI), Dr. Tran Chi Thanh (President of the VINATOM), Prof. Dr. Jozef Misak (UJV Rez, a.s. (Nuclear Research Institute) discussed the history of activities, current research results, and development orientation in the field of atomic energy and nuclear technology of Korea, Viet Nam, Czech Republic respectively. The invited speakers presented technological advances and infrastructure being developed worldwide. Specifically, Dr. Dohee Hahn (SMR Technology Coordinator, IAEA) presented on the development and activities of the IAEA related to small modular reactors (SMRs) globally. Prof. Dr. Hiroyoshi Sakurai (RIKEN) introduced the infrastructure and advanced equipment at RIKEN used to study nuclear physics of unstable isotopes. Mr. Jeong Kong Lee (KAERI, Korea) presented on the status of Ki-Jang research reactor development.

In-depth research papers also presented during the plenary session. For example, Dr. Raghunath Sahoo (Chairperson, ALICE/STAR-India Collaboration Board, IITI, India) talked about experiments in the ALICE project at LHC to study high energy physics. Dr. Sergey E. Yakush (IPMech RAS, Russia) introduced recent developments in numerical modeling of melt-water interactions in application to steam explosions. Prof. Péter Lévai (Hungary) gave a presentation on the need and opportunity in management of nuclear physics data. Dr. Jin-Young Lee introduced KIGAM's new rare earth recovery technology. Viet Nam also had two presentations in this plenary session, by Dr. Nguyen Kien Cuong (Dalat Nuclear Research Institute) on the core, fuel management and enhancement radioisotope production on the Dalat Nuclear Research Reactor and Prof. Dr. Mai Trong Khoa (Bach Mai Hospital) on the current and future use of radiopharmaceuticals in clinical practice in Viet Nam.

The plenary session included a roundtable discussion between the VINATOM and Joint Institute for Nuclear Research (JINR) on research results and prospects for cooperation between the two sides with leading experts such as Dr. Sergey N. Nedelko (Chief Scientific Secretary of JINR) presenting on status and prospects of multidisciplinary complex of large research infrastructures at Dubna. Dr. Valery N. Shvetsov (Frank Neutron Physics Laboratory) gave a presentation on neutron physics at pulsed sources at JINR; Dr. Grzegorz Kamiński (Flerov Laboratory of Nuclear Reactions) presented on a research with radioactive beams at FLNR.

During the VINANST-15 conference, an IAEA workshop on "The Social and Economic Impacts of the RCA Programme and Innovation Initiatives in Asia and the Pacific Region" was held with invited speakers such as Dr. Jane Gerardo-Abaya Director of the Division for Asia and the Pacific, Department of Technical Cooperation, IAEA who discussed the IAEA's strategic initiatives in the context of economic and social benefits of the IAEA technical cooperation program; Prof. Dr. Le Huy Ham from Vietnam Agricultural Genetics Institute who presented the social and economic impact assessment of RCA Projects in mutation breeding; Prof. Dr. Soehartati Gondhowiardjo from the Cipto Mangunkusumo Hospital, Indonesia presented the Social and Economic Impact Assessment of RCA Projects in Radiotherapy; Dr. Ilham Mukriz Zainal Abidin from the Malaysian Nuclear Agency presented the Social and Economic Impact Assessment of RCA Projects in NDT.

The 15th Vietnam Conference on Nuclear Science and Technology (VINANST-15) is an important scientific event not only for the Vietnamese atomic energy community but also has great significance for promoting scientific research, development of atomic energy application in Viet Nam in the context of Viet Nam's active promotion of the science and technology, the application of atomic energy for peaceful purposes. For more information, please visit <https://vinanst.vinatom.gov.vn/>

Interview: Fellow of the RCA/KAIST Master's Degree Programme

Q. Can you please introduce yourself?

A. I am Hanna Yasmine, an Indonesian and am currently 28 years old. My Master's major is Nuclear Engineering in the Department of Nuclear and Quantum Engineering of the Korea Advanced Institute of Science and Technology (NQE-KAIST). My bachelor degree is in Nuclear Engineering and I work at the Nuclear Energy Research Organization, National Innovation and Research Agency of Indonesia. Thus, it is natural for me to pursue a master's degree in Nuclear Engineering. I embarked on my journey in Nuclear Engineering because I was inspired by the Star Trek - Into Darkness (2013) movie which depicted a nuclear reactor as the main power source for their interstellar ship.

After enrolling in the bachelor program, I found out that the intersection of nuclear technology and social science fascinated me more - that was when I discovered the fascinating sides of nuclear safety, security, and safeguards. It never crossed my mind that a science with complex mathematical equations, different branch of physics and chemistry, has equally deep examinations from social science lenses. These social science lenses have similar diversity in natural science too, ranging from law to international relations. Acknowledging this cross-disciplines opportunity, I set my career goal to be as flexible as a nuclear background could offer, as a researcher. I wish to be a researcher who can flexibly be involved in the non-proliferation issue, then later be involved in emergency-preparedness projects, and if a different opportunity arises I can participate in the physical protection system research.

Q. How did you find the RCA/KAIST Master's Degree Programme and what are the requirements?

A. My first introduction to RCA/KAIST Master's Degree Programme was from the 2017 awardee of the programme, Andhika Yudha. He explained about the various benefits and challenges as a KAIST student, being one of the prestigious and competitive universities in South Korea. At first, I was hesitant because I did not think I would be qualified enough to enrol into KAIST, but after seeing the administrative requirements, I decided it was worth a shot. The requirements were very simple: completing the online application on the KAIST website, providing various types of personal identification, obtaining two recommendation letters, and the English language proficiency was optional. Of course, the best part is that the RCA/KAIST Master's Degree Programme



covered the admission fee. Accordingly, getting approval from the professor would make even easier the already-simple admission process.

With the fairly simple requirements and benefits that KAIST provide, I would recommend this program to my work colleagues. My workplace is a nuclear research institution that just underwent reorganization and now it pushes their employees to pursue higher education, including Masters degrees. RCA/KAIST Master's Degree Programme is good for my work colleagues because it provides the necessary benefits to sustain living in Korea and the study period adheres to the requirements imposed by my institution, 2 years for the Master's programme. In addition, as the majority of my work colleagues have a nuclear engineering background, they do not have to take the required fundamental courses in NQE-KAIST and this gives them freedom to pick courses according to their interest.

Upon enrolling in the RCA/KAIST Master's Degree Programme, I was expecting to learn deeper insights into Nuclear Security because my background had an involvement in nuclear security. As the study went on, I found a newfound interest in the statistical approach of nuclear policy. This field is underutilized in my institution so I think this field will bring new opportunities in my institution on which to research.

Q. Please tell us what did you gain from the Programme. Where there any challenges? How did you address them?

A. The foremost benefit that I received from this programme is financial security. I think financial security is the most important aspect in studying abroad, especially from a developing country. Studying in KAIST is academically challenging and demanding, so without a secure financial support, it will cripple the students in juggling the stress of both academic and financial aspects. Relatedly, this programme provides financial support to both the professor and student in the lab. Usually, a student's livelihood is supported by the project's funding thus the expectations and demands from the professor will be higher. With this program, a student's livelihood does not have to be directly dependent on the professor and the professor has more freedom to assign the student to relevant projects. This is what I experienced in my study for two years.

However, this freedom also brings a different challenge. Because I was not directly involved in the project, it took me almost two semesters to narrow down my research topic. Fortunately, I received tremendous guidance from the PhD graduate in my lab, thus I could finally settle on one research topic that took me to graduation.

Q. It was your first time to visit Korea. How was living in Korea for two years? Share with us any good memories/episodes.

A. Korea has excellent healthcare and public transportation systems. Thanks to the national insurance scheme, medicines and health services are affordable. The public transportation system is also reliable to take people to important places within a short time. In addition, internet reception is equally fast and accessible. I do not think there were moments where my internet was slow or out of service.

My good memories in Korea would be the lab activity on Jeju Island. It was a workshop activity to attend the Spring Korea Nuclear Society Conference, where we got to attend our professor's seminar on nuclear energy policy. Afterwards, we got to experience wonderful natural landscapes of Jeju, ranging from crystal-clear waterfalls, beautiful cliffs, blooming flower fields, to the vast horizon of the sea. The food selection in Jeju was wonderful. Abalone butter rice and grilled abalone became my favourite food in Korea.

Q. What is your future plan? Please share suggestions or recommendations for the programme.

A. Because my career path is to be a researcher, it is given that my next step after obtaining my Master's degree is to obtain a doctoral degree. I am grateful for this programme because it gave me all the necessary resources to obtain my Master's degree, while simultaneously opening the opportunity to obtain my doctoral degree.

I think what can be improved from this programme is to adjust the stipend received with the inflation rate and with the rising cost of national health insurance. The national health insurance fee is based on the duration of the stay, so the longer a student stays, the fee increases. Giving an extra stipend for this rising fee would alleviate the financial burden on the student. The next suggestion would be the career development opportunities. Research internship or fellowship opportunities, preferably cross-institutional and multidisciplinary, would tremendously enrich the student's experiences in nuclear research. ✓

◆ RCA/KAIST Master's Degree Programme

RCARO implements the RCA/KAIST Master's Degree Programme to contribute to preserving and enhancing the nuclear technology capacities of the RCA region by training high-qualified students from the RCA GPs. This two-year programme mainly provides lectures on the Application of Nuclear and Quantum Engineering Materials and its design project at the Korea Advanced Institute of Science and Technology (KAIST). Since 2003, a total of 43 students from 11 countries have benefited from this programme and they have been contributing to strengthening nuclear and radiation technology capability in their respective countries. For more information, please visit www.rcaro.org.

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

173 (up to 2022)

◉ Number of persons trained in regional training courses

Approximately 10,000.

◉ 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