

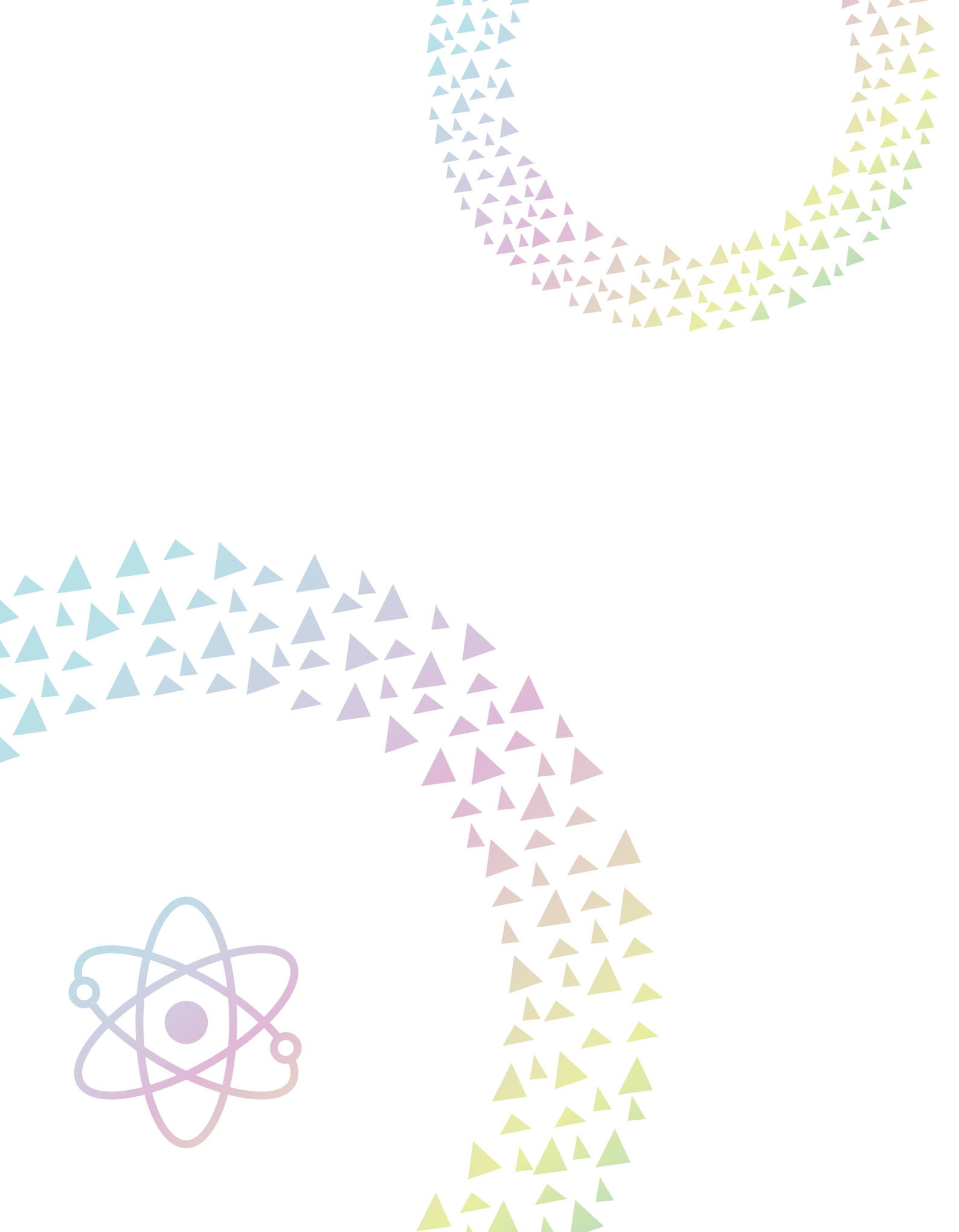


RCA

Regional Cooperative Agreement

For Research, Development and
Training Related to Nuclear Science
and Technology for Asia and the Pacific

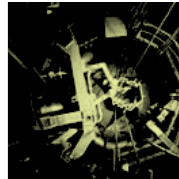
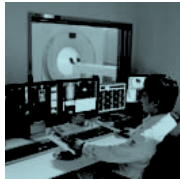


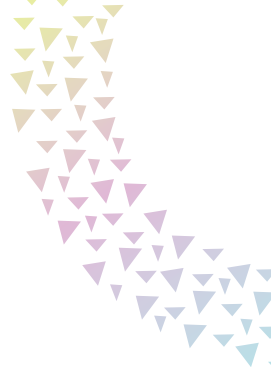




Regional Cooperative Agreement

For Research, Development and Training Related to Nuclear Science
and Technology for Asia and the Pacific



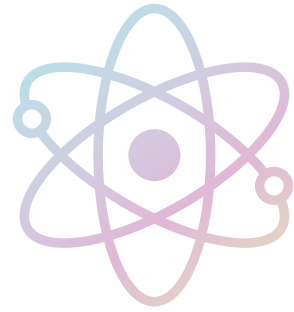
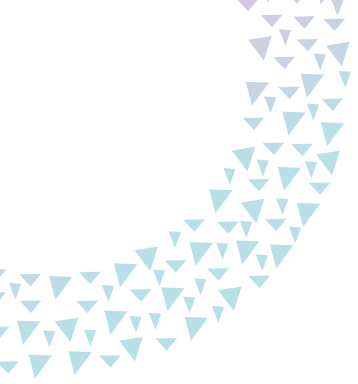


The RCA (Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology for Asia and the Pacific) is an intergovernmental agreement among the International Atomic Energy Agency (IAEA) Member States in the Asia-Pacific region.

Since its establishment in 1972 as the first regional cooperative agreement under the auspices of the IAEA, the RCA has had a long history of providing an effective framework for regional cooperation bringing socioeconomic benefits to the Government Parties and the region. It has not only delivered projects that have transferred a wide range of beneficial nuclear science and technology but it has also demonstrated the power of these technologies to contribute to the sustainable development and enhanced socioeconomic well-being in the region.

Under the umbrella of this Agreement, the Government Parties have effectively steered the RCA Programme to address their specifically identified needs and priorities as well as those of the Asia-Pacific region generally. Through the development of nuclear technology and science, more cost-effective and environmentally sustainable solutions have been able to be applied to address these problems.





RCA Government Parties



The RCA Government Parties (GPs) are the Member States of the IAEA in the Asia-Pacific region who have notified their acceptance of the Agreement to the Agency. Since the RCA first came into force in 1972, twenty-two (22) GPs have entered into the Agreement.

Under the terms of the Agreement, the GPs undertake, in cooperation with each other and with the IAEA, to promote and coordinate

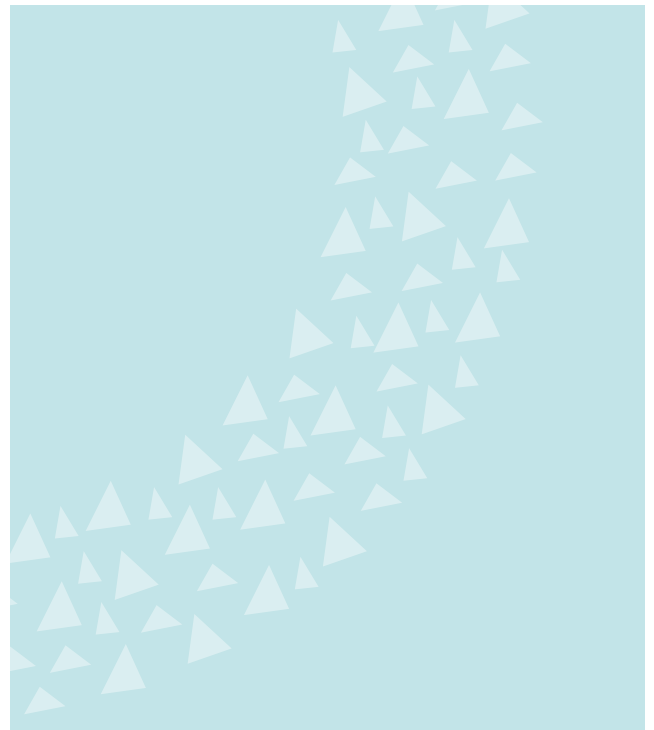
cooperative research, development and training projects in nuclear science and technology that can improve the living conditions of the people and contribute to preserving the nature in the region.

The GPs are represented by the designated National RCA Representatives (NRs) who are the principal contact points and, jointly in consensus, take all the decisions for the operation and





implementation of the RCA Programme. The NRs participate in two major annual meetings, namely the National RCA Representative Meeting (NRM) and the General Conference Meeting (GCM), which are the decision-making fora. Acting on behalf of their GPs at these meetings, they consider policy issues, development priorities, overall management of the RCA Programme and other relevant matters.



※ **Technical Cooperation among Developing Countries (TCDC)**

TCDC is the sharing of expertise, technology, resources, facilities and other capacities among Developing Countries. It is an underlying principle of the RCA Programme to utilize TCDC extensively in all its projects. This effectively identifies and responds to the needs of the GPs in similar development stages and leverages synergies of their collaborative works, enabling the GPs to plan mutual growth and strengthen their collective self-sufficiency.



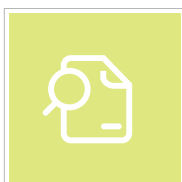
The RCA shall be recognized as an effective partner in providing nuclear technologies that enhance socio-economic wellbeing and contribute to sustainable development in the region.



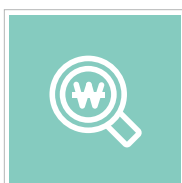
Identify and implement nuclear technologies that address regional priority needs



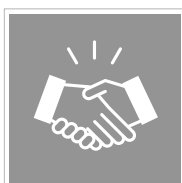
Encourage sustainability of nuclear technology capacities in the RCA Government Parties and to ensure effective transfer of those technologies and associated technical know-how to end-users



Coordinate cooperative research in applications of nuclear science and technology in support of agreed regional priority needs



Promote the benefits of nuclear technologies to appropriate end-users and decision makers, and identify potential partners and funding mechanisms to support an expanded RCA programme



Develop regional networks for information and experience sharing, mutual assistance and resource mobilization

Milestones

- 1972** ● Establishment of the RCA
- 1973** ● Launch of the first regional cooperative project on preservation of fish and fishery products
- 1979** ● Implementation of the UNDP/IAEA/RCA Industrial Project
- 1996** ● Establishment of the Guidelines and Operating Rules (GOR)
- 2002** ● Establishment of the RCA Regional Office (RCARO)
- 2006** ● Establishment of the RCA Medium-Term Strategy
- 2014** ● Establishment of the RCA Programme Advisory Committee (PAC)
- 2017** ● 45th Anniversary of the RCA
15th Anniversary of the RCARO

RCA Strategic Priorities for 2018 – 2023

The RCA Programme deploys strategic priorities that are regionally needs-driven and reflect development priorities of the GPs. The RCA strategic priorities also align with the UN Sustainable Development Goals for the betterment of the region.

Food and Agriculture



Increase agricultural production, productivity and quality of plant and animal commodities through sustainable use of available resources

Contribute towards better adaptation to human activities and climate change by strengthening resilience to external and climate shocks such as natural disasters, coastal erosion and drought

Facilitate global trade in food through the applications of NS&T that may contribute to regionally harmonized regulatory systems and enhance food safety and security

Educate extension services and farmers to be more responsive to the introduction of new nuclear and related technologies

Environment

Air Pollution

Continue to improve and strengthen knowledge on application of nuclear analytical techniques for characterization and identification of sources of air pollution, especially for the new GPs

Facilitate the use of regional database on coarse and fine air particulates by the end-users for decision making purposes

Assess the health impact of air pollution

Expand air pollution studies through application of other nuclear and related techniques and methodologies

Coastal and Marine Resources

Enhance the capability to assess the impact of human activities and climate change on marine and coastal ecosystems



Facilitate the use of regional database on marine radioactivity and pollutants by the end-users for decision making purposes

Assist the relevant regulatory authorities to adopt nuclear based analytical techniques to improve decision making related to marine pollution, including Harmful Algal Blooms (HAB)

Water Resources

Strengthen the capacity and capability of water administrations to effectively manage water resources

Assess the effect of human activities and climate change on the water cycle

Promote the application of nuclear techniques in environmental forensics to identify sources of pollutants, to understand anthropogenic and geogenic mechanisms and to support remedial actions

Human Health



Strengthen cancer management programmes in GPs, including training of radiation oncologists, medical physicists and technologists

Simplify and harmonize protocols on diagnostic imaging and for treatment/palliation planning and radiotherapy treatment

Assist in the development and utilization of radio-labelled pharmaceuticals for imaging and treatment

Strengthen nuclear medicine to effectively diagnose and assess the extent of cardiovascular diseases, diabetes, mosquito-based diseases, and to monitor cancer treatment effects

Promote nutritional studies to develop and monitor nutrition programmes to address malnutrition in all its forms

Promote system-based approach to address communicable diseases; namely TB, HIV/AIDS, malaria and other emerging diseases

Industry



Increase sustainable use of natural resources to produce viable products through radiation technologies

Improve safety and efficiency, reduce pollution and energy consumption of industrial processes through radiotracer techniques, NDT/NDE, advanced CT and radiation processing technologies

Expand the use of nuclear techniques in emerging industries (nanotechnology, biotechnology, robotics, nucleonics and semiconductor)

Radiation Safety



Encourage self-assessment and peer review of regulatory infrastructure by the Nuclear Regulatory Authorities (NRAs) in RCA GPs, and harmonize related methodologies and approaches at the regional level

Mentor new RCA GPs as well as those GPs without adequate radiation safety infrastructure to achieve the safety levels required by IAEA Thematic Safety Areas (TSAs) 1, 2 & 3, and to plan for the next TSAs in accordance with their specific requirements and resources

Energy Planning



Enhance the regional capacity and capability in energy forecasting and planning in support of informed decision and policy making

Assist developing GPs in conducting country-specific studies on sustainable energy development using TCDC and other appropriate modalities



IAEA and RCA

The Agency assists the RCA through provision of technical advice and support as well as major involvement in the implementation of the regional activities. Furthermore, it plays an active role in encouraging policy dialogue on strategic aspects of the RCA Programme, providing assistance to the RCA NRs. Financial support of the RCA Programme is provided through the Agency's Technical Cooperation Fund, as well as through extrabudgetary donations from the GPs and funding from other regional/international bodies.

Based on the firm and shared ownership and commitment of the GPs as well as the strong alignment with the goals and imperatives of the Agency's Technical Cooperation Programme, the RCA and its Programme are widely recognised as an extremely successful example of effective regional cooperation.

Partnership with Other Regional/International Organisations

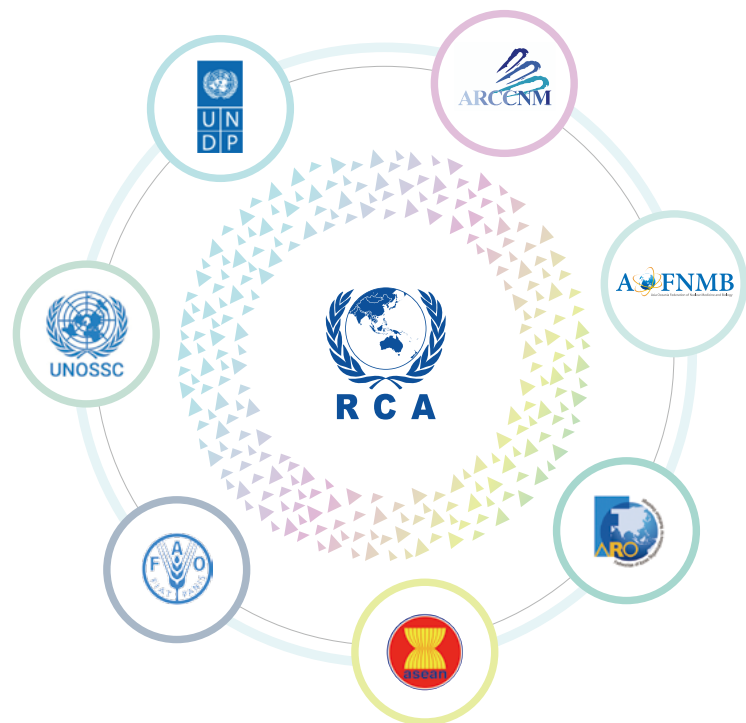
The RCA proactively seeks for strategic partnerships through collaboration with other regional and international organisations in order to create more secure environment for the implementation of its programme and boost its profile.

Strategic partnerships have been achieved with international organisations such as UNDP, UNOSSC and FAO as well as a host of regional organisations. These links have facilitated mobilization and sharing of expertise, technology and financial resources, enabling the RCA to maximize the impact of its programme and better respond to regional ad hoc needs. In addition, the RCA can take advantage of the opportunities enhanced through the cooperation to increase its awareness outside of the region as well.

***UNDP:** United Nations Development Programme

UNOSSC: United Nations Office for South-South Cooperation

FAO: Food and Agriculture Organisation of the United Nations



Management and Operational Support for the RCA

The RCA GPs establish various ad hoc committees and working groups composed of their experts to provide advice and insight on a variety of issues related to the management and operation of the RCA Programme.

In addition, the RCARO provides a wide range of support to the RCA Programme and the RCA GPs, including administrative support to the IAEA, through a formal administrative arrangement.

RCA Programme Advisory Committee

The RCA Programme Advisory Committee (PAC) consists of highly qualified and experienced individuals from the GPs, who provide advice to the NRs on their task of planning, management and direction of the RCA and its Programme as well as other related matters.

Being involved in all stages of the development of the projects, it makes recommendations to each NRM and GCM on matters related to the quality of the projects and their compatibility with the strategic directions for the RCA.

RCA Working Group on Coordination of the RCA MTS 2018-2023

The Medium-Term Strategy (MTS) 2018-2023 is a key strategic plan for improving the efficiency and effectiveness of the RCA Programme. A working group on coordination of the MTS, consisting of members from the GPs who have a wide range of skill sets and knowledge covering RCA processes and

procedures, was established to assist with successful implementation of the strategy on the RCA Programme. By providing recommendations on the milestones of the MTS to the NRs, the working group supports proper execution of the strategy, enhancing the benefits of the RCA Programme.



RCA Regional Office

The RCA Regional Office (RCARO) was established in 2002 in Daejeon, Republic of Korea, and was given the primary roles to increase the RCA awareness (visibility) and promote partnerships (viability). It carries out promotional activities to raise the profile of the RCA to target audiences and operates the RCA website (www.rcaro.org) which also enhances information sharing and communication of the GPs.

The RCARO promotes partnership with other regional/international organisations, such as the UNDP and UNOSSC, with the aim of maximizing the benefits for the GPs that can be derived from these reinforced networks.

In addition, it supports the implementation of the RCA by performing secretariat duties, such as preparation of policy meetings; coordination of working groups; and publication of RCA Annual Reports.





RCA

Programme Achievements

Under the RCA Programme, cooperative research, development and training projects are undertaken in an effort to promote peaceful application of nuclear science and technology in the Asia-Pacific region.

The projects cover the topics that are regionally needs-driven and align with development priorities of the GPs. They also contribute to achieving the UN Sustainable Development Goals.





Agriculture



Maintaining the security and safety of food supply has been a major challenge in Asia and the Pacific region where the population and the consumer demand for safe, wholesome and nutritious foods are increasing rapidly. The RCA has put efforts in finding solutions for sustainable agricultural development in the region with a holistic approach of applying nuclear technologies to the production cycle of agricultural products from breeding crops to storing processed goods.

Through the RCA projects, plant breeding techniques, for instance radiation-induced mutation, were facilitated to assist the GPs in improving agricultural productivity and environmental sustainability. By applying the techniques in a safe and appropriate way, new crop varieties have resulted in high yields and profitable return to the farmers. In addition, nuclear-technology-applied fertilizers, such as Plant Growth Promoter (PGP), have been introduced to stimulate better plant immune system of the plants

and reduce the environment pollution by deducting the use of chemical fertilizer and pesticide.

In another area, irradiation technology has been applied to enhance food security. It can extend the shelf-life of foods through the reduction of biological contamination of foodstuffs. It has also been very effective in the phytosanitary (plant health) treatment of plants and crops for export. Irradiation has been recognised as a safe and practical technology to secure food safety to foster global trade and economic development of the GPs, and at the same time, respond to the stricter human health and plant health controls worldwide.





Environment



The onrush of industrialization and urbanization in Asia-Pacific countries attributed to the shortage of fresh water and clean air, undermining the living conditions of the residents. The RCA has been seeking for integrated solutions through applying nuclear technologies to combat these environmental pollutions.

For instance, to address the scientific and societal issues involving fresh water resources, isotope techniques have been widely promoted to assess the quality of water supplies. The techniques give a

direct insight into the movement and distribution processes of pollutants by tracking the indicators of contamination in the water.

Further, the RCA successfully established and upgraded the Asia-Pacific Marine Radioactivity Database (ASPAMARD), a comprehensive compilation of radionuclides in the regional seas and marine organisms. This database has taken a role of detecting radiological sources and observing any spatial or temporal trends in the territorial water of the GPs.



Alleviation of air pollution was another challenge that the region confronted. The RCA has implemented projects to transfer highly sophisticated nuclear technologies used to monitor air particulate matters (APM) and analyze microscopic particles of pollutants. It has contributed to facilitating regulations on air pollution in some countries, as well as establishing a regional database on air pollutants.



Human Health

The RCA has undertaken various activities to improve patient care in fighting non-communicable diseases in the region, such as cancer, and to strengthen the workforce and expert network by providing education to professionals and sharing knowledge and expertise among the GPs.

Through RCA projects on nuclear medicine technologies, the developing countries have adopted advanced techniques of imaging and diagnosing disease matters. The imaging technology has allowed the technicians to identify functional and molecular changes in human bodies, enabling them to detect unhealthy conditions of patients and plan treatment at an earlier stage. In addition, the online set of training materials for nuclear medicine professionals made possible through the establishment of Distance Assisted Training On-Line (DATOL), has made it possible to provide sustainable education even to those physicians who had previously found such access to such training out of reach, due to financial and locational constraints.



Another notable achievement has been the regional improvement in the quality of radiotherapy, a major cancer therapy that has been effective in curing or relieving the cancer symptoms using ionizing radiation. The RCA has provided focused training, as well as expert consultations on the performance and quality assurance of radiotherapy practices, that have contributed significantly to the strengthening of the human and institutional capacities of the GPs and through these actions significantly enhance the quality of patient care in the region.





Industry



The RCA has played a pivotal role in applying nuclear technology to industrial sectors of the region. Specifically, RCA projects have contributed to improving the competitiveness of manufactured products through better quality control at low cost.

Radiation processing utilizes ionizing radiation technology to produce advanced materials. The outcomes from R & D activities in this technology has facilitated the introduction of cheaper and environmental-friendly means of production and has led to commercialization of these products.

One example of the application is in the area of radiation crosslinking, which is now widely used for the production of insulated wires and cables, plastic pipes, heat shrinkable tubes and films, plastic foams, hydrogels and automobile tyres, resulting in a wide range of commercial opportunities, income generation and economic development of the region.

Other application areas in industry are non-destructive testing (NDT), which is an essential part of the quality assurance in the construction and manufacturing industries, and radiotracers, which are uniquely able to assist in the on-line diagnosis of operational problems in processing industries. Through RCA projects, technicians acquired competence in utilizing the technology, leading to more affordable maintenance services and reliable assessment, and eventually contributing to the sustainable growth of their socio-economy.





Radiation Safety



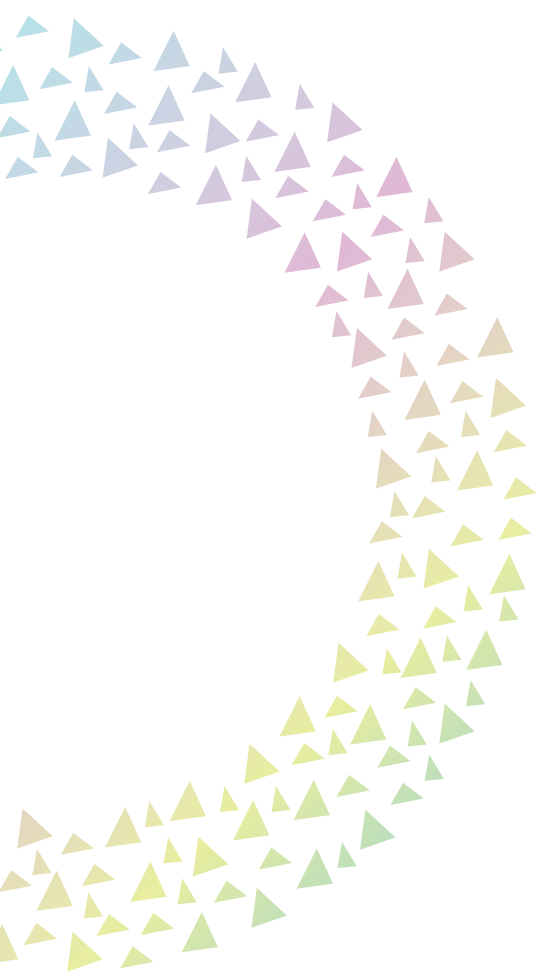
The wide application of ionizing radiation from medicine to industries has brought great advantages in our everyday life but it has also increased the potentials for exposure to radiation sources. It has long been recognised that exposure to high levels of radiation, externally or internally can result in long-term negative health consequences.

In this regard, the RCA has strongly promoted radiological protection techniques used for controlling medical/occupational exposure and measuring dose uptake. This effort has contributed to reducing expected dose and securing radiation safety of patients and workers. Moreover, it established the groundwork for transboundary networks to facilitate information exchange and communication among the GPs. In particular, the Asia Region ALARA (keeping radiation “As Low As Reasonably Achievable”) Network (ARAN) was

established to facilitate the principle of maintaining exposure of the patients and personnel to ionizing radiation at a practically low level.

These RCA’s initiatives have supported further expansion of nuclear technologies and their safe. RCA activities are expected to continue to sustain radiation protection, enhancing the safety of workers, people and the environment of the region.





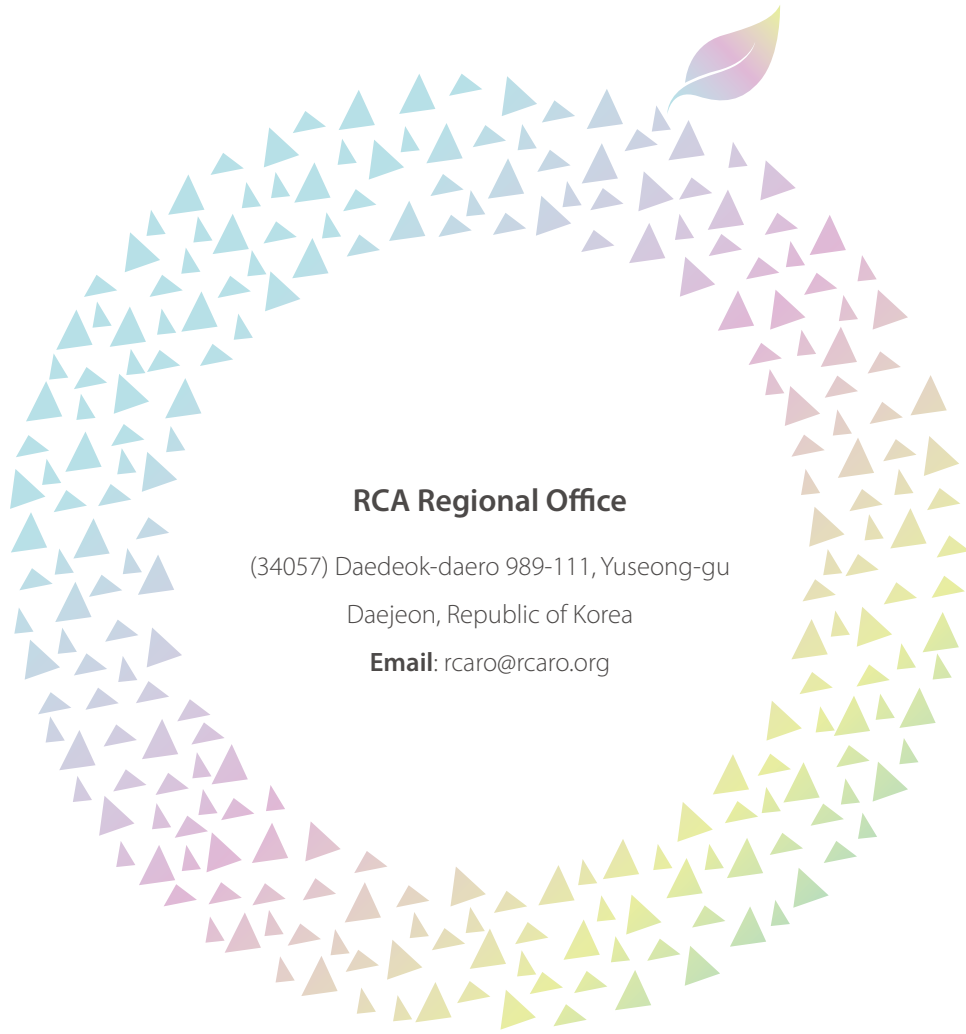
How to Participate

The RCA welcomes interest from regional and international organisations in potential partnerships in the RCA Programme.

If you would like to learn more about the RCA, please visit

www.rcaro.org





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