RCA

Regional Cooperative Agreement

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



RCA

2026 Edition. Printed on recycled paper.

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

Established in 1972 as the first regional cooperative agreement under the auspices of the IAEA, the RCA provides a framework through which the Government Parties steer the RCA Programme and related activities to address regional needs through the peaceful use of nuclear science and technology. Their strong commitment has strengthened regional capacities in the application of nuclear technologies and contributed to social and economic well-being.

In 2022, the RCA marked its 50th anniversary with its first Ministerial Level Meeting, where the Government Parties reaffirmed their ownership and commitment to innovative approaches. The IAEA also conducted social and economic impact assessments of the RCA Programme, demonstrating its collective contribution to sustainable and resilient development in the region.

Vision

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

Mission

01 Identify and implement nuclear technologies that address regional priority needs

02 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

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

04 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

05 Develop regional networks for information and experience sharing, end-users and decision makers, and identify potential partners and funding mechanisms to support an expanded RCA Programme

Milestones

1972
Establishment of the RCA

1973
Launch of the first regional cooperative project

1997
Adoption of the RCA Guidelines and Operating Rules (GOR)

2002
Establishment of the RCA Regional Office (RCARO)

2006
Formulation of the RCA Medium-Term Strategy (MTS)

2013
Establishment of the RCA Programme Advisory Committee (PAC)

2021
Adoption of the RCA Regional Programme Framework (RPF)

2022
50th Anniversary of the RCA
20th Anniversary of the RCARO

2026
Formulation of the Technical Advisory Panel (TAP)

The Government Parties (GPs) are the IAEA Member States in Asia and the Pacific that have formally accepted the RCA Agreement. Since it first came into force in 1972, the Agreement has grown to include 22 GPs.

Under this framework, the GPs actively promote and coordinate cooperative research, development, and training projects. By leveraging nuclear science and technology, these initiatives are dedicated to improving the living conditions and preserving the environment in the region.

The GPs are represented by designated National RCA Representatives (NRs), who serve as the principal points of contact and make decisions for the implementation and operation of the RCA Programme. On behalf of their respective GPs, the NRs participate in two key annual meetings, namely the Regional Meeting of National RCA Representatives (NRM) and the General Conference Meeting (GCM), to address policy issues, development priorities and overall management of the RCA Programme.



RCA

Government Parties

Management and Operational Support for the RCA

RCA Chairs Committee

The Government Parties take turns serving as the RCA Chair country, with their National RCA Representatives assuming the role of RCA Chair. The RCA Chairs Committee comprises the current, future and past Chairs, who each serve for three years. With the support of the other members, the current Chair oversees the administration of the RCA Programme, facilitates policy meetings and represents the RCA Government Parties.

The Committee also participates in meetings of the Standing Advisory Committee of the RCA Regional Office, providing strategic advice on its activities and operations.

Technical Advisory Panel

The Technical Advisory Panel (TAP) provides National RCA Representatives with technical advice on development priorities and strategic planning for the RCA Programme. Composed of regional experts from diverse fields, it contributes throughout the RCA project cycle, from formulation to assessment, while advising on strategic directions and emerging technologies. Through this role, the TAP helps strengthen the effectiveness and socio-economic impact of the RCA Programme.



RCA Regional Office

Established in 2002 in Daejeon, Republic of Korea, the RCA Regional Office (RCARO) works to strengthen regional ownership, visibility and long-term viability of the RCA. It develops strategic initiatives that expand opportunities for the Government Parties and enhance the benefits of regional cooperation.

RCARO promotes the RCA through partnerships with regional and international organisations, resource mobilisation and outreach activities highlighting the peaceful uses of nuclear science and technology. It also supports knowledge sharing through the RCA website and technical and promotional publications.

Under the Practical Arrangements with the IAEA, RCARO also supports the smooth operation of the RCA by assisting with secretariat functions, including policy meetings and RCA Annual Reports, and by providing direct support to the RCA Chair.

IAEA and RCA

The IAEA actively supports the RCA by providing technical advice, administrative backing and direct involvement in regional activities. The Agency also facilitates policy dialogue on the strategic aspects of the RCA Programme and offers continuous assistance to the National RCA Representatives. Furthermore, funding for the RCA Programme is driven by the IAEA's Technical Cooperation Fund, alongside extrabudgetary contributions from the Government Parties and other regional and international bodies.

Built on a foundation of shared ownership and mutual commitment of the Government Parties as well as close alignment with the goals and imperatives of the IAEA's Technical Cooperation Programme, the RCA stands as a highly successful model of effective regional cooperation.





Partnership with Other Regional/ International Organisations

To secure a robust environment for its Programme and elevate its global profile, the RCA seeks for and builds strategic partnerships with regional and international organisations. Successful collaborations with bodies such as the UNDP and ASEAN, alongside various regional institutes and partners, have facilitated the mobilisation and sharing of vital expertise, technology and financial resources. These alliances enable the RCA to maximize the impact of its Programme, respond agilely to emerging regional needs, and successfully extend its visibility beyond the region.



RCA Programme and Its Impacts

For more than five decades, the RCA Programme has advanced the peaceful application of nuclear science and technology to address shared development challenges across Asia and the Pacific. Guided by the priorities of the Government Parties and supported by the IAEA, it strengthens regional cooperation, builds capacities and promotes the transfer and application of nuclear technologies for sustainable development.

The RCA Regional Programme Framework (RPF) provides the strategic basis for shaping the Programme around the shared priorities and evolving needs of the Government Parties. Drawing on their needs and the outcomes of previous RCA projects, it identifies priority areas for regional cooperation and guides the development and selection of future projects, while allowing flexibility to respond to emerging needs and opportunities.

Complementing this forward-looking approach, the IAEA's social and economic impact assessments demonstrate the wider benefits generated through the RCA Programme. By examining seven key technologies, the assessments provide tangible evidence of the Programme's contribution to sustainable and resilient development across the region.

Regional Programme Framework 2024-2029

The RCA Regional Programme Framework (RPF) 2024-2029 guides the development of future RCA projects based on the shared priorities and needs of the Government Parties. It identifies key areas where regional cooperation and nuclear science and technology can contribute to sustainable development across Asia and the Pacific.

Agriculture



Food Safety
Strengthen analytical capabilities for food safety, authenticity and international trade

Plant Breeding
Develop improved crop varieties with higher productivity, quality and resilience

Food Irradiation
Expand Safe irradiation technologies to improve food safety, reduce losses and support trade

Environment



Water Resources Management
Improve the assessment sand sustainable management of surface water and ground water

Monitoring Air-Pollution
Strengthen pollution monitoring, source identification and the use of data for health and environmental policy

Marine and Coastal Pollution Monitoring
Improve monitoring and management of marine pollution, coastal ecosystems and climate-related impacts

Human Health



Radiation Oncology
Advance radiotherapy technologies, professional training and access to quality cancer treatment

Medical Physics
Strengthen education, clinical training and quality assurance in radiation medicine

Nuclear Medicine
Expand advanced imaging, theranostics and radiopharmaceutical applications

Industry



Non-Destructive Testing
Advance inspection technologies and professional capabilities for safer and more reliable industries

Radiation Processing
Apply radiation technologies to advanced materials, recycling and environmental applications

Other Areas



Radiation Protection
Strengthen regulatory and technical infrastructure for the safe use of nuclear technologies

Energy Planning
Build capacity for long-term, sustainable energy planning using updated analytical tools

Mutation Breeding

Mutation breeding uses ionizing radiation to induce genetic variation in seeds, cuttings or plant tissue, creating a broader range of traits from which breeders can select improved varieties. Rather than introducing foreign genes, it accelerates the natural mutation process. This helps develop crops with higher yields, improved quality and greater resilience to drought, disease and other environmental stresses.

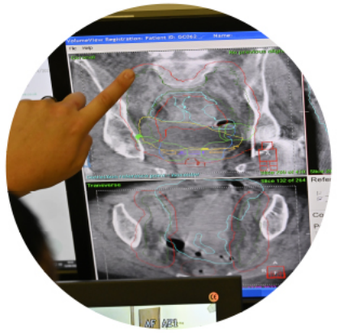
- **7,300+ promising breeding lines** developed, leading to **254 officially released mutant crop varieties**
- **32.7% higher yields** and an **additional 34.8 million tonnes** of produce
- **Reduced use** of chemical fertilizers by 21%, pesticides by 17% and irrigation water by 12%, with **soil fertility improved** by 8%
- **Significant economic gains** through higher production and market value and lower input costs



Radiotherapy

Radiotherapy uses ionizing radiation to damage and destroy cancer cells while limiting harm to surrounding healthy tissue. It is one of the principal forms of cancer treatment and may be used alone or together with surgery and other therapies. It also plays an important role in palliative care by shrinking tumours, relieving pain and reducing symptoms in patients with advanced cancers.

- **3,215 radiation oncology departments** and **94 radiation oncology societies** established across the region
- **232% growth in the specialist workforce**, substantially expanding regional capacity for cancer treatment
- **Major increases in radiotherapy equipment and access to treatment** within patients' own countries
- **Improved tumour control and survival**, generating approximately thousands of cumulative health-adjusted life years





Non-Destructive Testing

Non-Destructive Testing (NDT) comprises techniques used to examine the integrity, quality and condition of materials, components and structures without damaging them. By detecting internal cracks, corrosion and other defects that may not be visible on the surface, NDT supports quality assurance, preventive maintenance and safe operation across a wide range of industries. It is particularly important for maintaining the reliability and extending the service life of critical industrial and infrastructure assets.

- **Extensive regional networks** of inspection centres and training organisations established
- **Thousands of personnel certified annually** in conventional and advanced NDT techniques
- **Wider industrial use of NDT** for quality control, operational safety and asset reliability
- **Strong knowledge generation and exchange** through thousands of research publications and technical activities





Air Quality Monitoring

Air quality monitoring using nuclear and related analytical techniques helps identify the composition, sources and movement of airborne pollutants.
By analysing particulate matter and tracing pollutants back to their origins, these techniques show how different sources contribute to air pollution and how pollution can move across national boundaries. The resulting evidence supports governments and environmental authorities in developing targeted policies and measures to protect public health and the environment.

- **Strengthened regional capacity** for air sampling, analysis and source apportionment
- **Hundreds of research outputs and publications** generated through regional cooperation
- **Scientific evidence** incorporated into environmental regulations, policy decisions and air-quality standards
- **Better pollution management** contributing to health and environmental benefits, including reduced pollution-related mortality and morbidity





Food Safety

Nuclear and isotopic techniques contribute to food safety by controlling foodborne hazards, extending shelf life and verifying the authenticity and origin of food products. Food irradiation can reduce spoilage and harmful microorganisms, helping lower food losses and the risk of foodborne illness. Isotopic and related analytical techniques can also detect mislabelling and fraud, strengthen food supply-chain transparency, and support compliance with international standards and access to domestic and international markets.

- Hundreds of relevant facilities established and skilled personnel trained, **expanding regional testing and treatment capacity**
- **Stronger standards, guidelines and regulatory frameworks** for food irradiation and food safety
- **Improved protection** against foodborne hazards, mislabelling and food fraud
- **Reduced losses** from food waste and foodborne illness, while supporting opportunities for safe international trade



Nuclear Medicine

Nuclear medicine uses radiopharmaceuticals for the diagnosis and treatment of disease. PET and SPECT imaging provide functional information on organs and tissues, supporting more accurate diagnosis and treatment planning, while targeted radionuclide therapies and theranostics enable increasingly personalized care.

- **750 national personnel** participated in RCA-supported training initiatives
- Improved professional knowledge and the **efficiency and accuracy of nuclear medicine services**
- **Expanded availability** of PET, SPECT and radioactive iodine therapy
- Contributed to **improved patient outcomes and well-being**

Groundwater and Isotope Hydrology

Isotope hydrology uses isotopes to determine the origin, age, recharge, movement and quality of groundwater. It also helps identify interactions between surface water and groundwater and trace contamination, providing a scientific basis for sustainable water-resource management.



- **292 individuals trained** in isotope hydrology techniques
- **156 facilities established** with isotope-analysis capabilities
- **Improved information** on groundwater sources, recharge and flow
- Strengthened groundwater monitoring, management and governance

How to Participate

The RCA Regional Office (RCARO) publishes periodicals designed to keep stakeholders informed about overall RCA activities and to showcase the peaceful applications of nuclear science and technology in the region.
These publications deliver valuable insights, timely analyses, and comprehensive research tailored for a diverse audience – including experts, policymakers and the general public.

To subscribe to our publications, please visit the RCA website or contact RCARO.

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