

Project Concept Template

Project Proposals for the RCA Programme 2024/2025

Part 1: Information Sheet

Project proposals for the RCA Programme 2024/2025 are to be prepared using the attached template and submitted **BEFORE 31ST OF DECEMBER 2021**. Completed templates will be reviewed by the RCA PAC in January 2022.

Resource documents required for developing Project Concepts can be found in the RCA web-site – ([RCA Regional Office \(rcaro.org\)](http://RCA Regional Office (rcaro.org))), under Projects/Resource Documents. (see below for the list of resource documents.

The Project Concept should be prepared in consultation with the stakeholders of the other participating GPs. Information on RCA stakeholders can be found in the RCA web-site ([RCA Regional Office \(rcaro.org\)](http://RCA Regional Office (rcaro.org))), under Projects/Project Information.

Please request access to the RCA Members Only web-site from RCARO (email: rcaro@rcaro.org) through your National RCA Representative if you do not already have access.

A proposal will be evaluated against the following criteria:

- Alignment of the objectives with priorities set out the RCA Regional Programme Framework (RPF) for 2024/25.
- Whether the project addresses a regional need.
- Whether nuclear technology is an essential component of the project.
- Whether outcomes and achievements of previous projects in this area of technology are considered.
- Does the proposal overlap or duplicate current or previous RCA projects?
- Is a convincing case made to justify further projects in this area?
- Is there a strong TCDC component?
- If the proposal is essentially an extension of previous projects in this area that have been implemented for more than 2 TC Cycles, does the proposal include arrangements for the transfer of project leadership to another GP?

List of Resource Documents on RCA web-site (www.rcaro.org)

1. Timeframe for preparation, review and approval of Project Concepts
2. Brochure on Logical Framework Matrix (Quick Reference Guide on Designing IAEA TC Projects)
3. RCA Regional Programme Framework for 2024-29
4. Details of RCA TC Projects implemented in 2007-2019
5. List of TC Projects being implemented in 2020/21 and projects approved for 2022/24
6. Recommendations on Technical Cooperation among Developing Countries (TCDC)

Please note that your National Representative will be reviewing the concept document to ensure that it has been prepared in compliance with the RCA and IAEA Criteria for TC Projects

Please contact the Chair of the RCA Programme Advisory Committee, Dr. Prinath Dias at prinathd@yahoo.com if you need assistance.

Part 2: Concept Template¹

Title: Improving Treatment of Cancer through Theranostics in the RCA Region

Analysis of gaps / problems / needs as applied to the RCA region:

Outline the major gaps / problems/ specific needs to be addressed by the project (~ max 300 words):

Review the resource documentation and list any past RCA projects that have addressed similar problems/needs in this area of technology. Consider outcomes and achievements of previous projects, and avoid any overlap or duplication.

Theranostics in nuclear medicine, or nuclear theranostics, refers to **the use of radioactive compounds to image biologic phenomena by means of expression of specific disease targets such as cell surface receptors or membrane transporters**, and then to use specifically designed radiolabeled agents to deliver ionizing radiation to the cancerous lesions for imaging or targeted therapy.

In the past, seven RCA regional projects on Nuclear Medicine have been implemented since 2007. As a result of these projects, guidelines on establishing PET facilities and on clinical applications of PET have been prepared; a number of new Gamma Cameras, SPECT CTs and PET CTs have been installed in RCA GPs; Nuclear Medical professionals in RCA GPs have been trained using the IAEA distance learning platform DATOL; capacity of using radiology in terms of CT for diagnosis of cancer has been improved; a project platform established on the RCA website (http://www.rcaro.org/undp_s11) for information sharing and networking among experts; and a total of 2,774 NM Professionals have been trained and are networking in oncology, cardiology and neurology, representing an increase of 140%.

But the *gap analysis* of previous projects indicates that none of the above-mentioned projects conducted at the RCA level, was precisely focused on developing theranostics. Enhancing Theranostics (combination of diagnosis and therapy) application in clinical practice may be clinically applied to neuroblastoma, lymphomas, neuroendocrine tumors, paraganglioma, and prostate cancer. Specifically, technical support should be prioritized (through academic programmes among RCA member states) on the role of theranostics in neuroendocrine tumours and prostate cancer.

What are the major additional capabilities/skills in this area of technology that will be provided through this project (~ max 200 words).

The rationale behind this project is that peptide receptor radionuclide therapy (PRRT) has become a major component in the management of unresectable or metastatic gastroenteropancreatic, bronchopulmonary, and other neuroendocrine tumors, and prostate cancer. So, the major additional capabilities/ skills in this area of technology that will be provided through this project among the RCA member states will focus on developing and clinical applications of various kinds of established and emerging radiopharmaceuticals for theranostic approaches for various kinds of cancers with promising results.

Overall Objective: (Required for the preparation of the IAEA Regional Programme Note)

State the overall long-term objective to which the project will contribute. This should reflect an impact

¹ If you have not been involved in drafting a concept before and if you are not fully acquainted with the RCA and its Programme you are encouraged to support advice and assistance from your RCA National Representative.

related to the RCA Regional Programme Framework for 2024/29.

Improvement of diagnostic and therapeutic capabilities among RCA Member States by using radioisotope based diagnostic and therapeutic techniques (e.g., *theranostics*).

Problem and objective analysis using objective and problem trees is recommended. (See pages 9 and 10 of the Quick Reference Guide on Designing IAEA TC Projects in resource documents)

Problem Tree provided in **Annexure “A”**, and Objective Tree provided in **Annexure “B”**.

Project Outcome: (Required for the preparation of the IAEA Regional Programme Note)

The outcome is the planned result of a project, achieved through the collective effort of stakeholders and partners. It represents the change or improvement that occurs as a result of the project. Should be worded in past tense. (e.g., The capability fordeveloped)

The capability for treatment of cancer by using radioisotope based diagnostic and therapeutic techniques (e.g., *theranostics*) was fully developed and clinically implemented among the RCA Member States.

RCA Projects are to be designed to have a Socioeconomic Benefit:

What is the potential socioeconomic benefit that would be realised from the project concept over a 5 to 7-year horizon?

The expected potential socioeconomic benefits that would be realised from the project concept over a 5 to 7-year horizon may include:

- i)** Availability of strong technical human resource for extending technical support in developing and clinically applying *theranostics* among the RCA Member States,
- ii)** Availability of research know how and competency in health sector
- iii)** Development of expertise in handling cancer patients and research in health sector
- iv)** Benefit to national economies and common people of Member States of the RCA region

Putting together, all of these factors will result in huge socioeconomic benefits.

Proposed Participating Government Parties:

List the Government Parties expected to participate in the project. Indicate target and resource GPs:

The Government parties expected to participate in the project may include:

- **Resource Government parties - i.e.,** which already have competency in the technology and do not require additional training, e.g., Australia, China, Korea Republic of (ROK), Malaysia, New Zealand, **Pakistan (Lead Country)**, Singapore, Thailand, etc.
- **Target Government parties - i.e.,** which either possess intermediate experience or possess such expertise at partial level and are thus recipients, e.g., Bangladesh, Cambodia, Fiji, India, Indonesia, Laos, Mongolia, Myanmar, Nepal, Palau, Philippines, Sri Lanka, and Viet Nam, etc.

The exact role to be determined by each MS will be evaluated/ assigned in the first coordination meeting of the project with national coordinator from each participating RCA Member State (MS).

Technical Cooperation among Developing Countries (TCDC) Project Component:

Please refer to the resource documents (RPF and Recommendations on TCDC)

Will the project design feature partnering arrangements between those advanced and those less advanced in the technology to be transferred through this project? If so, list those expected partnerships.

Since, it is an academic type regional project designed to be implemented among RCA Member States so it strongly believes on Technical Cooperation among Developing Countries (TCDC) through teaching and training activities (at physician, scientist and technologist level), between those advanced and those less advanced countries in the technology. The academic activities will include training courses, training workshops, expert missions, etc.

In order to optimally utilize the resources among the RCA Member States, the **sharing of a Developing Country's own expertise, technology, resources, facilities, and other capacities with another or other Developing Countries**, will be especially encouraged in this project.

As an example, the expected partnerships at various professional levels among various **Developing Countries** or between **Developing Countries and Advanced Countries** may include:

Physicians: "Paired" with host institution colleague, participate in theranostic treatment consultations, attend MDT meetings, prepare case presentations (short case), keep log of patients and clinical information, attend prepared lectures (1-2/ week), patient interviews, exams and scanning, reporting, attend all therapy sessions and work under supervision of consultant medical officer keeping a log of all clinical information, medications, vital signs, *etc.*

Scientists: "Paired" with host institution colleague, attend MDT meetings, attend prepared lectures (1-2 per week); Medical Physics: radiation safety supervision, radiation monitoring, dosimetry calculations and considerations; Radiopharmaceutical Scientist: prepare any in-house radiopharmaceuticals, QC; Preparation of presentation on procedures in managing the theranostic patient, *etc.*

Technologists: "Paired" with host institution colleague, perform scanning and therapy procedures as appropriate, monitoring of theranostic patients, image acquisition and reconstruction, attend prepared lectures (1-2 per week), *etc.*

Requirements for participation:

Indicate the minimum requirements that the counterpart institutions in Government Parties would need to meet in order to participate in this project.

The minimum requirements that the counterpart institutions in Government Parties would need to meet in order to participate in this project should be that each member state in the RCA region should be well equipped with basic infrastructure of nuclear medicine, preparation/ quality control of PET/ SPECT radiopharmaceuticals, radiation monitoring and dosimetry calculations, etc., that is already adequately available with almost all participating member states.

Stakeholder analysis and partnerships:

Briefly describe who are expected to be the end-users and principal beneficiaries of this project. Indicate whether the end-users contributed to development of the Concept.

Of course, the end-users and principal beneficiaries of this project from each participating Member State will be the patients and the health-care professionals which have contributed to development of the Concept.

Since this is a regional project among the RCA Member States, therefore, it will benefit all regional Member States participating in this project. In this way, the National Nuclear Institutes (NNIs) of participating MSs, clinical end-users engaged in providing diagnosis and treatment services in oncology, cardiology and neurology, along with patients being treated, are the main stakeholders of the proposed project. The role of NNIs will be to introduce, demonstrate and promote the technology to help solve and harmonize complex clinical trials. The role of end-users will be to adopt the subject technology while general public/ medical community will be responsible for acceptability of this technology keeping in view its demonstrated efficacy in various clinical applications. Thus, broadening the horizon, nuclear medicine institutions in the region, patients, as well as national and regional teaching societies in nuclear medicine and radiopharmacy such as the Asian Regional Cooperative Council in Nuclear Medicine (ARCCNM), the Asian School of Nuclear Medicine (ASNM), and other national and regional societies from participating member states related to nuclear medicine applications could cooperate and act as stakeholders benefiting from this regional project. It will definitely pay off in terms of socio-economic benefits, a better quality of diagnostic and treatment health infrastructure, its safe and economical management, thus leading to an improved and safer management of clinical facilities in the region.

Have any extra-budgetary funding possibilities been identified?

The extra-budgetary funding possibilities could be explored by national and regional societies in nuclear medicine, medical physics and radiopharmacy, among the participating Member States.

Role of nuclear technology:

Indicate the essential nuclear technique that would be used and outline why it is suitable for addressing the problems/needs in question.

The essential nuclear technique that would be used in this project will be the established and emerging radiotracers and radiopharmaceuticals being extensively used for the investigation of human health problems, especially in oncology, cardiology and neurology.

The nuclear technique is suitable to address the problem because such radionuclides when tagged with appropriate biomolecules have the potential to selectively and specifically visualize and treat the target cells, which is the major advantage of this technique over non-nuclear techniques.

Is this the only available technique that could be applied to address the problem/ need?

Keeping in view the diagnostic efficacy of PET procedures in oncology, cardiology and neurology, and the treatment potential of theranostics (in handling oncologic disorders), the *nuclear technology* seems the only available technique that would be applied to address the problem/ need.

Does it have a comparative advantage over non-nuclear techniques?

Yes, the nuclear techniques have potential advantages over non-nuclear techniques (e.g., diagnostic

radiological procedures) regarding sensitivity and specificity in imaging. Moreover, in theranostics, we can also treat the oncologic malignancies through nuclear techniques which are a potential comparative advantage over non-nuclear techniques.

Duration of the project:

Indicate the number of years required to complete the project:

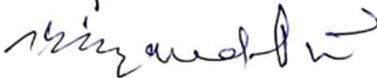
06 years (from 2024-2029).

Part 3: National Representative Endorsement for Project Concept

As the RCA NR of (RCA GP).....Pakistan....., I have reviewed the Project Concept thoroughly and confirm that it meets the following requirements:

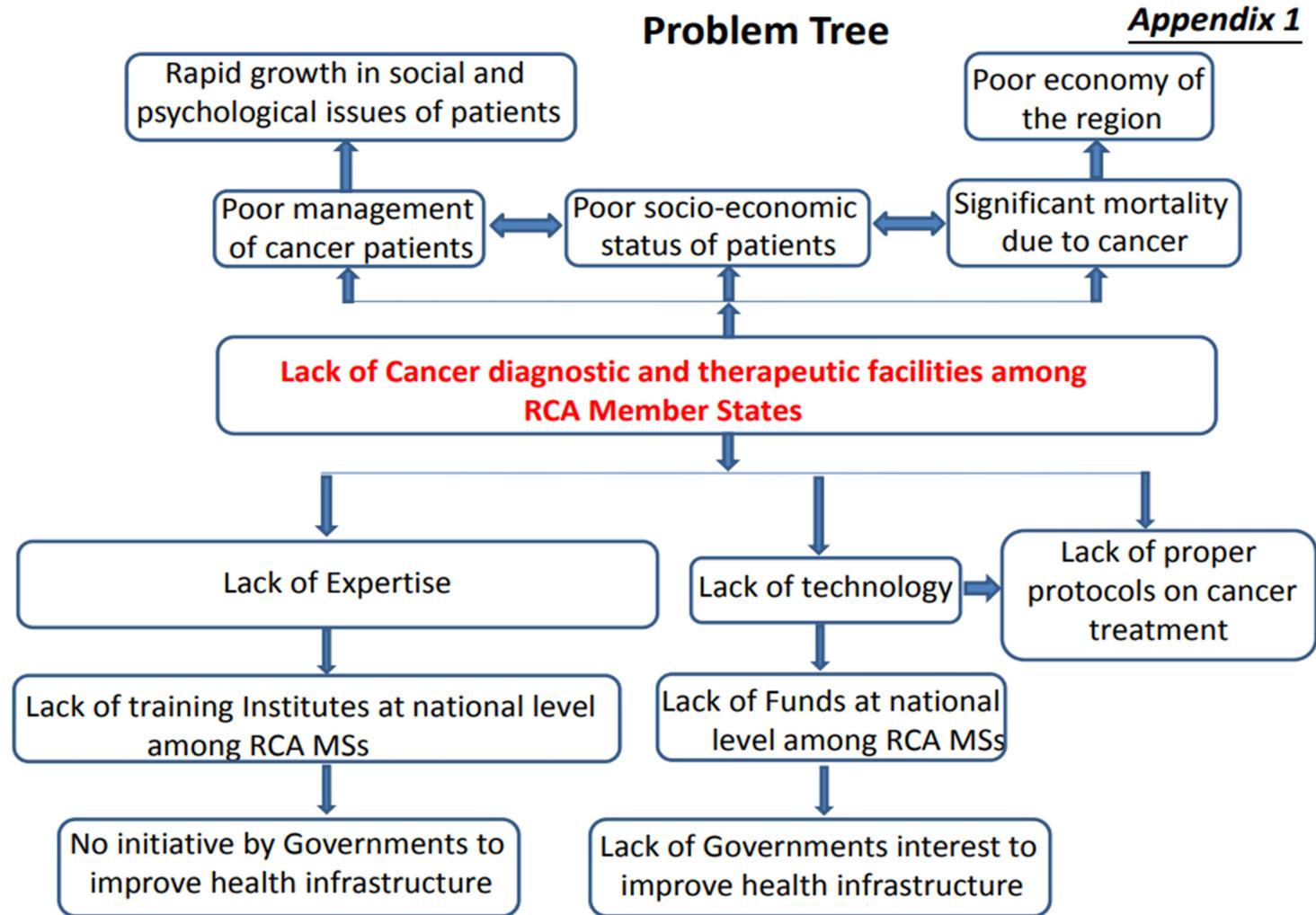
1. The objective of the Project Concept is aligned with priorities set out the RCA Regional Programme Framework (RPF) for 2024/25.
2. The project addresses a regional need.
3. Nuclear technology is an essential component of the project.
4. Outcomes and achievements of previous projects in this area of technology have been taken into consideration
5. There is no overlap or duplication with current or previous RCA projects
6. Further projects in this area can be justified (if relevant)
7. The Project Concept has a strong TCDC component

As recommended by RCA (PAC), -the concept has been merged with concept no. HH3 from Australia after detailed discussions with Australian counterparts.

Signature: 

Name: **DR. GHIYAS UD DIN**
Director International Cooperation
(RCA National Representative)
Pakistan Atomic Energy Commission
Islamabad

Date: 23 Dec. 2024



Annexure B

Objective Tree

