

**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 31<sup>ST</sup> 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://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://rcaro.org)), under Projects/Project Information.

Please request access to the RCA Members Only web-site from RCARO (email: [rcaro@rcaro.org](mailto: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](http://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](mailto:prinathd@yahoo.com) if you need assistance.**

## **Part 2: Concept Template<sup>1</sup>**

### **Title:**

*The title should be as concise as possible and should summarize the objective of the project.*

Strengthening cancer care and research by training Asia Pacific radiation oncology health professionals in data collection through radiation oncology electronic management systems.

### **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):*

The incidence of cancer is rising rapidly, with a global projection of 24 million cases annually by 2035<sup>1</sup>. Over 70% of these will arise in low and middle-income countries (LMICs). In 2020, nearly 60% of cancer deaths globally occurred in the Asia-Pacific region (APAC). APAC has been demonstrated to have the highest absolute deficit in radiotherapy services and in turn, the largest investments required to meet those needs.<sup>2</sup> By 2035, >5 million cancer patients will benefit from radiotherapy annually in Asia-Pacific countries (APAC)<sup>3</sup>.

Audits of APAC radiotherapy departments have demonstrated that even with modern equipment, there are clinical areas requiring improvement<sup>2</sup>. The Global Task Force in Radiotherapy for Cancer Control suggested “*high quality radiotherapy services must be underpinned by investment in the generation and collection of data*”<sup>4</sup>. However, there is variation in the quality of oncology data collected by Member States (MSs). The cancer registry data used for Globocan cancer incidence estimates includes data taken from National sources (e.g. Indonesia, Singapore, Mongolia), local sources (e.g. China, India, Nepal) and in situations where no registry data are available, data from neighbouring countries are used (e.g. Bangladesh, Cambodia, Laos)<sup>5</sup>. Reliable country specific data on cancer presentations, treatment and outcomes are needed to facilitate well directed and cost-effective interventions. Country specific data should inform cancer policies, and investment in reliable data collection and cancer registries is a strategic priority to strengthen cancer management.

Currently there are little published data on radiation oncology treatment and cancer outcomes for most RCA Government Parties (GPs), particularly low-and middle-income countries (LMICs), although there is evidence for disparities in terms of radiotherapy access and technology<sup>4</sup>. Treatment centres in almost all Government Parties (GPs) make use of electronic management systems (EMS), such as ARIA or MOSAIQ, as part of their radiotherapy process. These EMSs require entry of data relating to patient demographics, cancer diagnoses and treatments, as well as administrative data. They represent a rich source of information about local patterns of cancer, treatment and health systems. However, the level to which GPs use their EMSs varies significantly and many have not been trained to use EMSs for the purposes of data collection and quality improvement.

---

<sup>1</sup> 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.

*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.*

The following RCA projects have addressed cancer management within the Health Thematic Sector over the last decade:

- RAS6038 Strengthening Medical Physics through Education and Training (RCA) (2003-2016)
- RAS6066 Reducing the Shortage of Oncology Professionals through an Applied Sciences of Oncology Course (ASOC) 2012-2015
- RAS6062 Supporting 3D Image-Guided Brachytherapy Services (2012-2017)
- RAS6065 Strengthening the Application of Stereotactic Body Radiation Therapy to Improve Cancer Treatment (2012-2016)
- RAS6072 Strengthening Intensity Modulated Radiation Therapy Capability in the Region (RCA) (2015-2017)
- RAS6053 Improving Image Based Radiation Therapy for Common Cancers in the RCA Region (RCA) (2009-2016)
- RAS6077 Strengthening the Effectiveness and Extent of Medical Physics Education and Training (RCA) (2014-2017)
- RAS6085 Enhancing Stereotactic Body Radiation Therapy for Frequent Cancers in the RCA Region
- RAS6087 Enhancing Medical Physics Services to Develop Government Parties through Regional Leadership in Standards and Education and Training Support (2018-2021)

The project themes have often been related to strengthening the application of a radiotherapy technique or technology, for example intensity modulated radiotherapy (IMRT) or stereotactic body radiotherapy (SBRT). However, an important part of the application of these technologies includes the quality of treatment, including the monitoring of the outcomes of treatment – and the proposed project will therefore form an important component to the application of these techniques. Other projects have focused on the education and training of oncologists and physicists but have not been specifically focused on training in data collection.

More recent projects which have included the strengthening of cancer management programs through collaboration with national societies and online clinical networks include:

- RAS6096 Empowering Regional Collaboration among Radiotherapy Professionals through Online Clinical Networks (2020-2023)
- RAS6086 Strengthening Cancer Management Programmes in Government Parties through Collaboration with National and Regional Radiation Oncology Societies (2018-2021)

This proposed project aligns with the theme of collaboration, as it would involve the collaboration of GPs in the development of a minimum standard of routinely collected data, based on previous minimum standard datasets<sup>6</sup> through the EMS. This collaborative effort will allow regular audit and feedback of current practice, enable measurement of the impact of quality improvement initiatives or new technologies and improve the accuracy of cancer reporting from the APAC region. This data will be critical in assisting governments and policy makers to identify gaps in care and priorities for interventions. This data can also be used by an APAC research consortium to improve cancer care in the region.

Upcoming projects for the 2022-2023 funding cycle include:

- Standardisation of radiotherapy in palliative care in the RCA region
- Strengthening clinical application of hypo-fractionated radiotherapy in the RCA region
- Improving the safety and quality of radiotherapy in Asia Pacific Region through auditing and medical physicist training

This proposed project will complement both the ‘Radiotherapy in Palliative Care’ project and the ‘Application of Hypo-Fractionated Radiotherapy’ project as both will require standardised data entry into the EMSs including cancer stage and histology as well as the collection of outcome measures. This proposed project will also tie into the ‘Safety and Quality of Radiotherapy’ project, as medical physicists may be involved in the collection and extraction of data.

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

The major additional skills that will be provided include :

- Learning how to accurately code and enter data on cancer presentations (including diagnosis, stage, histology) and outcomes (including alive/death status) for the purposes of maximising clinical efficiencies and quality improvement
- Training to utilise existing radiation oncology electronic management systems (EMSs) during daily clinical duties as a resource-effective way to collect data
- Training on data extraction from the EMS, including but not limited to radiation oncology planning and treatment data, for the purposes of service utilisation metrics, quality assurance, research or to inform policy
- Training on research methods for data analysis and interpretation, to assist in the identification of areas requiring improvement
- Understanding the potential for data from EMSs can be used for the purposes of cancer planning radiotherapy services planning and health policy and how to best present the data for these purposes
- Training on methods for data sharing and linkage with other existing databases such as Cancer Registries and wider hospital databases

Australia is well placed to lead this project, having already supported several GPs in collecting and publishing similar data<sup>7-9</sup>. Virtual training and support will facilitate remote centres to be included in the project.

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

*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)*

The overall objective of this project is to improve the care and outcomes of cancer patients in the Asia-Pacific by improving and harmonising the quality of oncology data collection.

Problem/objective analysis:

## PROBLEM

Varied quality in the generation and collection of data



Limited data sharing/linkage with existing databases such as Cancer Registries, hospital databases



Lack of incidence, stage, outcome and toxicity data to inform clinical practice and cancer service planning



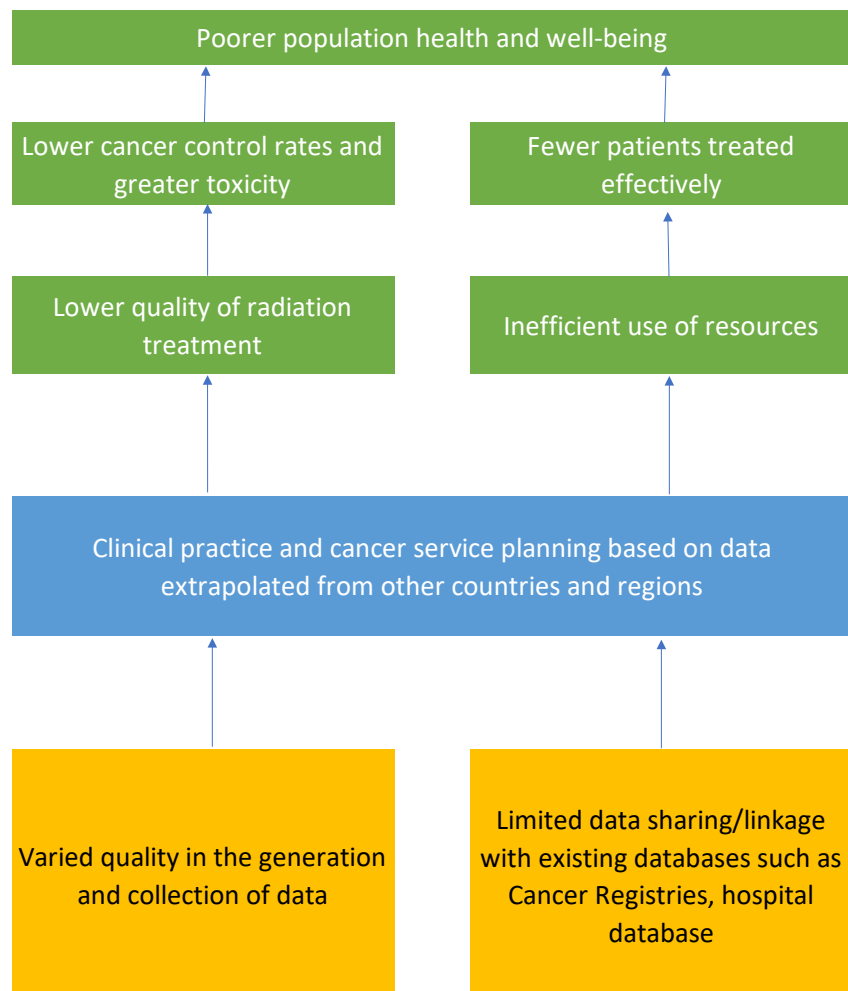
## OBJECTIVE

High quality, uniform generation and collection of data

Increased data sharing/linkage with existing databases

Robust collection of incidence, stage, outcome and toxicity data to inform clinical practice and cancer service planning.

### Problem Tree:



The priorities for the RCA projects during 2024-2029 in the area of radiation oncology are as follows:

• **Sustainable technical transfer of advanced RT technology for various cancers in our region through education and training in these fields.**

The foundations of advanced radiotherapy technology include the generation and online collection of oncology and radiotherapy data and a move away from the reliance on paper-based methods, in order to ensure quality of technology implementation and an ability to review outcomes and toxicity.

• **Establishment of efficient and sustainable teaching of advanced radiation oncology for radiation oncologists (ROs), medical physicists (MPs), and radiation therapy technologists (RTTs).**

Given the nature of this project involves training on the EMSs, it allows for the efficient and sustainable teaching of ROs, MPs and RTTs through methods such as online workshops and recorded copies of these for efficient long term training support.

• **Meeting the needs of newcomer GPs by transferring technology and educating personnel in the basics of radiotherapy**

The collection of complete, consistent, accurate and timely data is a fundamental component of a radiation oncology service and this project will ensure that the needs of newcomer GPs are met.

• **Improving the treatment capacity for specific clinical indications in line with the WHO target goals or other global/regional initiatives**

In order to meet WHO target goals, there needs to be a means to measure the access to treatment and the outcomes. For example, in the case of cervical cancer, the proportion of patients accessing radiotherapy and the survival of these patients. This project will have the potential to measure some of these indicators.

This project will also support the achievement of the UN Sustainable Development Goal 3 (“Ensure healthy lives and promote well-being for all at all ages”), through target 3.4, namely the reduction by one-third of premature mortality from non-communicable diseases.

**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. (eg. The capability for .....developed)*

A standardised system of radiation oncology data collection and extraction using Electronic Medical Systems has been developed across radiation oncology departments in 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?*

It has been previously demonstrated by the Global Task Force of Radiotherapy in Cancer Control (GTFRCC)<sup>4</sup> that investment in radiation oncology services will lead to a country gaining socio-economic benefits from keeping patients alive and symptom free, who subsequently contribute to the workforce and family units. Using a nominal cost model, this study estimated that there would be a net economic benefit of USD 278 billion globally if the need investments in radiotherapy were made. However, the taskforce

commission paper also identified that economic gains could be optimised by the adoption of the integration of data and widespread and timely reporting of patient-level information. Therefore, this project could potentially contribute to significant socio-economic benefits across the Asia-Pacific, by providing data on radiotherapy access and outcomes and thereby providing information for cancer planning stakeholders and policy makers.

**Proposed Participating Government Parties:**

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

Resource GPs will be those who already have a robust system of data collection, extraction and analysis through their EMSs. Target GPs will be those who do not. Whether each GP is categorised as a ‘target’ or ‘resource’ GP will be determined after the initial survey done during the 1<sup>st</sup> part of the project to assess prior training and current applications of the EMS.

Resource GPs:

Australia, New Zealand, South Korea, Japan, Singapore

Target GPs:

Malaysia

Mongolia

Laos

Myanmar

Nepal

Philippines

Sri Lanka

Thailand

Bangladesh

Cambodia

Indonesia

Pakistan

Vietnam

China and/or India may be either target or resource GPs depending on the level of experience of the participating radiotherapy professionals in using EMSs for data collection. Other Low and Middle Income MSs may be able to share experience in the use of EMSs for data collection and analysis (see TCDC section below). It is also possible that some of the high-income countries, currently listed as resource GPs, may use their EMS to a different level to other high-income countries and could still benefit in part from the training to be delivered through this proposed project.

Once the programme is established, it is anticipated that the other GPs with radiotherapy services may join. Fiji is likely to establish a radiotherapy service during the term of the project and would be invited to join. There is also potential to extend the project to other countries in the region that are not yet parties to the RCA, such as Papua New Guinea, which is also currently developing a radiotherapy service in Port Moresby.

**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.*

This project, by standardising information entry into the radiation oncology EMS and subsequent analysis, will allow for the further partnering and TCDC within the RCA. For example, there could be the potential for a consortium to publish data on radiotherapy and outcomes in SE Asia to extend the existing triangular co operation between Viet Nam, Cambodia and Laos PDR. As part of the process of determining the level of training to be delivered at the technical workshops, a survey will be conducted across the RCA members and will allow for DC GPs to compare their current utilisation of EMS to other DC GPs and help determine the learning goals for the workshops. There is the potential for more advanced DC GPs such as China, India, Malaysia and Indonesia to play an “intermediate” role in the training and supporting of less advanced DC GPs.

**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.*

Requirements for participation:

- Identified radiotherapy departments and professionals who would benefit from participation
- Support from departmental managers for their staff to attend initial and ongoing training
- Computer hardware and/or cloud services and internet connectivity
- Electronic Medical System such as MOSAIQ/ARIA or in the process/soon to acquire an Electronic Medical system
- Personnel within the oncology team who can manage the information system on an ongoing basis and potentially help train other staff, develop systems and check the quality of data entry.

**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.*

1. Radiation oncologists and clinical oncologists working in radiotherapy centres will be the main end-users. Other radiotherapy professionals, medical physicists, radiation therapy technologists and oncology nurses may also be end-users of the training.
2. Ministry of health of GPs, stakeholders involved in national cancer planning – as these data will potentially inform cancer policy



3. The IAEA, through the Applied Radiation Biology and Radiotherapy (ARBR) Section, will be approached to play a central role in the implementation of the project. In addition, partnerships through the Department of Technical Cooperation and PACT will also be pursued.

4. Partnerships with regional societies, including Federation of Asian Radiation Oncologists (FARO), SEAROG South East Asian Radiation Oncology Group (SEAROG), the SAARC (South Asian Association for Regional Cooperation) Federation of Oncologists and RANZCR will be important for the success of the project. It is intended that this project should complement their own activities. Furthermore, these societies will be approached regarding their potential role in assisting in the coordination of this project.

5. Links to other professional societies, centres of excellence, programs and initiatives, including but not limited to international outreach initiatives from ASTRO, ESTRO and Union for International Cancer Control (UICC), will be beneficial to secure contributions both in the form of experts, funding and other resources. It has been recognized that academic and professional societies within and beyond the member states are very much interested in opportunities to link their outreach programs to assist other centres in low/medium income countries

*Have any extra budgetary funding possibilities been identified?*

The RANZCR has an International Development Fund to provide small grants for overseas development work undertaken by College members or College groups that will improve patient care and raise the standard of practice. Given the international development, education and research components of this project, avenues for grant funding will be pursued by the lead country. The National Representatives of RCA Government Parties have also been approached.

### **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 nuclear technique to be used in the project area is radiation therapy for cancer, both external beam radiation therapy and brachytherapy. External beam radiation therapy uses medical linear accelerators or cobalt-60 treatment units. Brachytherapy uses radioactive isotopes, such as iridium-192, in close proximity to tumours. It has been estimated that approximately half of cancer patients globally should receive radiotherapy and that the percentage should be higher in many Low and Middle Income Countries of the APAC, such as Pakistan, where the optimal utilisation rate is estimated to be 58%<sup>8</sup>.

Radiation therapy is a cancer treatment which involves advanced technology and as part of this, the Electronic Management System is an integral part of the process. Because the majority of GPs already have the EMS as part of their radiotherapy infrastructure it allows the opportunity for quality improvement and the collection of radiotherapy and outcome data, without the need for additional equipment.

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

Radiation therapy is one of the major and essential treatment modalities for cancer along with surgery and Systemic therapy. The use of an electronic management system is integral to radiotherapy treatment, as it is used daily for the planning, treatment and quality assurance components of treatment. Therefore, since radiotherapy professionals already use the EMS clinically, they are well positioned to collect data regarding data encompassing patient presentations, treatment and outcome.

Once the data collection infrastructure has been established, there could be potential for knowledge transfer from radiation oncology professionals to surgical and medical oncology colleagues in the future, particularly in the setting of multidisciplinary care. Furthermore, information derived from this project can help governments, policy makers and stakeholders identify areas in need of funding and intervention.

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

Radiation therapy is often used in combination with surgery and chemotherapy to provide comprehensive care to cancer patients. Radiation therapy is sometimes used in place of surgery in order to preserve organs that would have to be removed if surgery were to be used to cure a cancer. Locally advanced lung cancer, locally advanced cervix cancer, larynx cancer and nasopharyngeal cancer are examples of clinical situations where radiotherapy is the preferred treatment option, due to its ability to both control result in less morbidity than surgery. In low and middle income countries (LMICs) in particular, patients often present with cancer at a locally advanced or metastatic stage and radiation therapy is often the recommended treatment, rather than surgery. Radiotherapy has been demonstrated to be a cost-effective treatment, including within LMICs<sup>4</sup>. In addition, it is often the most effective and convenient modality for palliation of symptoms due to incurable cancer.

### **Duration of the project:**

*Indicate the number of years required to complete the project.*

The project will take four years to complete. The initial phase will involve a survey to GPs to gain an understanding of the prior level of training and assess the capabilities of their current record and verify system and current usage of their electronic medical systems, in order to be able to ensure that the training workshops meet the needs of GPs. The second phase would involve the development and then implementation of the training workshop on a minimum set for data collection and, if there is demand for it, an additional training session for intermediate users. The third phase will involve a follow up training workshop regarding the extraction and analysis of data.

On completion of this project, the basic infrastructure for data collection and analysis should be set up in GPs. Therefore following completion, there may still be ongoing outputs from this project such as the inclusion of radiotherapy and outcome data within national cancer control plans of GPs as well as research publications from a consortium of radiotherapy departments in the Asia-Pacific. Ongoing collaborations between GPs could also lead to an increase in the scope of data which is collected in the future. A report/publication regarding the implementation of this RCA project could aid other regions around the world in performing similar initiatives.

The objective of this project is to train health professionals to collect and analyse patient information data such as diagnosis and stage, cancer treatment details (including radiotherapy details) and outcomes. This will lead to GPs having better understanding of the gaps in cancer care, thereby giving the opportunity to improve the quality of care. This information can also inform cancer service planning, thereby leading to improved outcomes. There is also the potential to form an RCA data consortium to publish radiotherapy and outcome data from the region.


## References

1. International Agency for Research on Cancer (IARC) Global Cancer Observatory <https://gco.iarc.fr/> Accessed 29<sup>th</sup> November 2021
2. Zubizarreta E, Van Dyk J, Lievens Y. Analysis of global radiotherapy needs and costs by geographic region and income level. *Clinical Oncology*. 2017;29(2):84-92.
3. Wilson BE, Jacob S, Yap ML, Ferlay J, Bray F, Barton MB. Estimates of global chemotherapy demands and corresponding physician workforce requirements for 2018 and 2040: a population-based study. *Lancet Oncol*. 2019;20(6):769-80.
4. Atun R, Jaffray DA, Barton MB, Bray F, Baumann M, Vikram B, et al. Expanding global access to radiotherapy. *Lancet Oncol*. 2015;16(10):1153-86.
5. International Agency for Research on Cancer (IARC) Global Cancer Observatory. Cancer Today : Data and Methods. <https://gco.iarc.fr/today/data-sources-methods> Accessed 29<sup>th</sup> November 2021
6. Australian Institute of Health and Welfare. Radiotherapy Waiting Times NMDS 2018- <https://meteor.aihw.gov.au/content/index.phtml/itemId/686202>. Accessed 10<sup>th</sup> December 2021
7. Eav S, Mora M, Ath V et al *The modernisation of radiotherapy services in Cambodia: a model of international collaboration* *Int J Radiat Oncol Biol Phys* 2021 111 (1) :14-22
8. Koh ES, Gogna NK, Minjgee M, et al *Implementation of 3D Conformal radiotherapy technology at the National Cancer Centre Mongolia : A successful Asia-Pacific collaborative initiative* *J Med Imaging Rad Onc* Available online 4th June 2021 <https://doi.org/10.1111/1754-9485.13254>
9. Opie C, Shwe KM. Improvements in radiation therapy services in Myanmar : 2012-2020. *J Med Imaging Rad Onc* 65:4 445-453
10. Yap ML, Zubizarreta E, Bray F, Ferlay J, Barton M. Global Access to Radiotherapy Services: Have We Made Progress During the Past Decade? *J Glob Oncol*. 2016;2(4):207-15

### **1. Part 3: National Representative Endorsement for Project Concept**

**As the RCA NR of Australia, 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

**Signature:** 

**Name:** Catherine Kelleher

**Date:** 23 December 2021