

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://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) 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:

Improved harmonization of food safety legislation to increase the adoption of phytosanitary irradiation in the Asia Pacific 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):

A brief description of the project (max. 300 words)

Worldwide the approvals for the use of phytosanitary irradiation have expanded rapidly in the last decade. However, despite widespread international endorsement of the safety of food irradiation, the legislation permitting the use of irradiation in the Asia Pacific Region is not harmonised. Legislation in the region can be classified into the following four categories:

1. Countries that do not permit the use of phytosanitary irradiation (Australia before 2003).
2. Countries that permit at the use of phytosanitary irradiation for at least one commodity (Australia from 2003-2021).
3. Countries that have generic or class wise approval for groups of food (Australia 2021).
4. Countries that use phytosanitary irradiation domestically but do not allow it for imports.

The aim of this project is to assist countries who want to expand their food safety legislation to include at least one commodity or to adopt Codex recommendations that recommend the safety of food irradiation in general. A key component of the project will see a local scientist undertake nutritional and organoleptic studies on economically important or underutilised fruits of their region. While more crops tolerate phytosanitary irradiation than other treatment technology, it is important to note that the response of a particular commodity is variety specific. Mango is one the most widely traded irradiated commodities but there are mango varieties that are severely damaged by irradiation while other varieties have excellent out turn with doses as high as 1000 Gray (Gy). For this reason, organophilic studies on local crops, undertaken by local research teams are crucial to building the trust of food safety authorities, exporters and National Plant Protection Organisations (NPPO's). Results from nutritional studies will also be important but these results are not expected to be contentious and should confirm the well-established fact that irradiated commodities are nutritionally adequate and toxicologically safe.

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.

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.

This project will compliment other current RCA (project RAS5087) and CRP ((project 2256 (D61025)) projects aiming to harmonise legislation on issues such as maximum energy levels of x-rays and the development of internationally approved generic irradiation treatments for all insect pests. The current and past projects have been successful in promoting phytosanitary irradiation throughout the Asia Pacific Region and the adoption of irradiation in the last 20 years has increased dramatically. However, there are still member states where the use of phytosanitary irradiation is not permitted, or approvals are on a case-by-case basis and as such they have not fully benefited from previous research activities.

In addition to research activities, this project will utilise resources developed in previous RCA projects such as the “Manual of Best Irradiation Practice” and APPPC RSPM No 9 “Approval of Irradiation Facilities”. Importantly, this will ensure that new exporters and NPPO’s are aware of the requirements that are needed for upscaling from research scale or sanitary treatments to commercial phytosanitary irradiation for international exports.

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

The project will host executive meetings to involve food safety authorities, nuclear agencies, NPPO’s and supply chain experts in countries that do not currently permit the use of irradiation as a phytosanitary measure. Consultation will be undertaken to determine current limitations to the adoption of phytosanitary irradiation. Upon completion of this process, local scientists can undertake their own nutritional and organoleptic studies on economically important or underutilised fruits of the region.

Where possible draft applications to amend food safety standards will be developed using results from this project and more than two decades of research from across the region. Two misnomers that do not require new research and have been successfully addressed by several RCA member states are the issues of radiolytic products and consumer acceptance. Information from recent applications by India and Australia on these issues can be included in any new applications in this project. Research methodology can also be streamlined based on previous research in Australia which showed that macronutrients are not significantly affected at low doses and that minerals and trace elements are not sensitive to irradiation. Vitamins, however, range from relatively high to low sensitivity to irradiation and will be the focus of any new nutritional trials.

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.

RCA RPF priority areas: Agriculture – Food Irradiation (A3) with cross-cutting relevance to Agriculture – Food Safety (A1) and Industry – Radiation Processing (IN2).

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)

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 fordeveloped)

Improved regional harmonisation of legislation allowing the use of irradiation for sanitary and phytosanitary purposes on fresh fruit and vegetables.

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?

Amendment of legislation to permit or expand the use of sanitary or phytosanitary irradiation will provide local industries the option of using a chemical free treatment that does not result in harmful treatment residues on the produce or the release of any chemicals that may be harmful to the environment, including the ozone layer, or human health. Irradiation is the only treatment that currently has generic treatments for fruit fly (ISPM 28, Annex 07) and a generic treatment for all insect pests (except Lepidoptera that pupate internally) that is approved in countries such as the United States, Australia, India, Malaysia, Pakistan, South Africa, Thailand and Vietnam. With generic efficacy approvals in place for many countries, the only limiting factor restricting the expansion/adoption of phytosanitary irradiation is the lack of harmonised food safety legislation.

Access to a chemical free treatment will facilitate trade and provide improved management and cost-effective assessments of agri-food access arrangements in RCA countries.

Proposed Participating Government Parties:

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

National Food Safety Authorities (Executive meetings only)

National Plant Protection Organisations and National Nuclear Agencies (Executive meetings and/or treatment providers)

Supply Chain Experts (Research providers) and Senior Industry Advisors

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 will specifically target countries that are less advanced in phytosanitary irradiation. Research will be conducted in countries that wish to expand their current irradiation approvals or have commodities that are economically important and don't have existing export pathways.

No specific partnerships have been identified yet. The proposed activities should be possible using research scale treatment facilities.

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.

Access to research scale irradiation sources (gamma, x-ray or electron beam) and supply chain teams that can undertake organophilic research (may already have experience with heat and cold treatments) and very basic nutritional analysis.

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.

Expansion of legislation to permit the use of irradiation on fresh fruit and vegetables has potential benefits throughout the region. However, the largest benefits will be in countries that currently do not permit the use of irradiation or have limited approvals. The end users are initially the food safety authorities, but the ultimate aim is to provide industries, exporters and NPPO's with another treatment option for exports.

This application has been developed by experienced irradiation researchers from the Queensland Government, dosimetry experts from the Australian Nuclear Sciences and Technology Organisation and Steritech Pty Ltd who currently operate four commercial irradiation facilities in Australia.

Have any extrabudgetary funding possibilities been identified?

“In kind” Contributions from 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.

Access to research scale irradiation sources (gamma, x-ray or electron beam) is essential to the research component of this project. In the long-term, the commercial adoption of phytosanitary irradiation will not proceed unless legislation permitting/expanding the number of commodities that can use irradiation is in place. Commercial companies cannot gain financial support to modify existing multipurpose facilities or build dedicated low dose phytosanitary facilities if the use of irradiation is prohibited.

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

For some countries irradiation is not currently a permitted phytosanitary measure. Heat, cold and fumigation treatments may be available to control many pests, especially fruit flies.

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

In general, more crops tolerate phytosanitary irradiation than conventional treatments such as heat, cold and fumigation. In addition to retaining fruit quality, irradiation also has an advantage that generic efficacy treatments are already in place in many countries and bilateral negotiations for new exports can begin immediately as soon as food safety legislation is in place.

While more crops tolerate phytosanitary irradiation than other treatment technologies, it is important to note that the response of a particular commodity is variety specific. An example is mangoes. In Australia commercial exporters quickly identified that some varieties can use the 400 Gy minimum absorbed dose and experience no deleterious effects while other varieties do not tolerate 400 Gy treatment. In other RCA countries protocols have been developed for mangoes but exports have not commenced because the 400 Gy dose severely damaged the main export variety. For this reason, organophilic studies on local crops and undertaken by local research teams is crucial to building the trust of exporters and NPPO's.

Duration of the project:

Indicate the number of years required to complete the project.

Four years. An important component of past projects such as RAS 5050 was the ability to hold face to face executive meetings. This project has been designed to allow member states to start research in the first year of the project and hold face to face meetings as travel restrictions due to COVID-19 are slowly lifted during the course of the project.

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:

A handwritten signature in black ink, appearing to read 'C Kelleher', is written over a light blue grid background.

Name: Catherine Kelleher

Date: 23 December 2021