

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

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?

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 (see page 5 of the RCA Regional Programme Framework)

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:

Impact of COVID-19 pandemic on the chemical compositions, sources, and health relevance of fine particulate matter in the Asia Pacific

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):

There has been compelling global evidence of the impacts of COVID-19 measures on the improvement of air quality and the return to the prior conditions as control measures are relaxed. Despite earlier studies focused on the general particulate matter (PM) and gaseous pollutant concentrations, there has been limited study focusing on the variation of the sources and chemical composition of PM as well as their health relevance. The present study aims at investigating the highly time resolved variation of sources by monitoring the organic and inorganic fragments of fine particulate along with black carbon during COVID-19 pandemic. This project will continue using NATs for elemental composition characterization and also expand the application of other nuclear and related techniques to improve understanding of the PM sources. Our previous project database, representing pre-pandemic period, will be fully utilized in the proposed project to improve the capacity in data interpretation. A state-of-the-art, PM sampler which is capable for taking samples for PM chemical speciation will be deployed.

The fine particle chemical composition data will be used to analyse sources that are representative for the pandemic and post-pandemic peak periods. Cross-country assessments will be conducted and information on national policies on the lockdowns and other control measures will be gathered. The rest of project period will be invested in collecting data on the long-term hospital visits along with relevant meteorological data in all participating GPs. Health effect relevance will be analysed against the long-term apportioned PM and time resolved estimated sources. A report will be prepared and communicated to the policy makers in term of the lessons learn to create better policy to build back better and sustain cleaner air. It is anticipated that this study will contribute towards a better understanding of the impacts of COVID-19 on environmental sustainability in the Asia Pacific region, especially on the air quality and health relevance. Nevertheless, project deliverables will help the region to formulate their strategy based on the build back better framework to further sustain the air quality gains.

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 of the IAEA TC Programme in resource documents)

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.

To enhance capability of personnel and the use of NAT for assessing impact of COVID-19 on the chemical compositions, sources, and health relevance of fine particulate matter in the Asia Pacific.

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)

The project outcome will be as follows:

- The better understanding to formulate the environmental regulations during the recovery period after pandemic.
- The use of NATs in assessing the impact of COVID-19 on the chemical composition, sources and health relevance is increased
- The capability of human resources in source identification, environmental risk and health impact assessment is enhanced.
- The number of end users and stakeholders get the benefit from this project is increased.

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?

Megacities of the world are facing severe environmental challenges due to industrial and vehicular emissions. However, after the COVID-19 pandemic, most countries restricted business activities, including transportations (land, sea, and air), manufacturing industries, construction, and mining activities. Globally, a significant decline in particulate air pollution was observed. Moreover, several studies estimated that COVID-19 lockdowns produced short-term benefits to air quality and human health. Still, there is a double-edged threat from the perspective of the long-term. First, ongoing efforts towards climate mitigation are adversely affected due to economic slowdown. Additionally, rising health issues along with financial fear (recession) could overshadow the problem of climate change. Second, the sudden resumption of businesses after the lockdown will put massive pressure on the environment.

Utilization of air quality and health data to link the impacts of air pollution on health at a regional level will be beneficial and provide important information on the impacts of COVID-19 not only during the pandemic, but also pre and post pandemic. It is anticipated that this study will contribute towards a better understanding of the impacts of COVID-19 on environmental sustainability in the Asia Pacific region, particularly from the perspective of the stakeholders. This study will create significant information based on regional scale data to support the stakeholders' ability to design better policies to build back better and sustain the cleaner air after the pandemic lockdown and other control measures. Our findings will provide important information for the policy makers to develop new rules and regulations to improve air quality. This study will emphasize the importance of continuing air pollution control strategies to protect human health and reduce the associated social welfare loss both during and after the COVID-19 pandemic. This

study will allow us to make cross-country comparisons and inform their governments that taking measures suitable to local conditions should be the basic principle when charting paths to counter air pollution during the post pandemic period. PM composition data collected across countries will provide useful hints on the potential dominant source changes during the pandemic, pre, and post pandemic periods. Monitoring networks and data made available in the member countries should be able to track policies in each country, e.g. COVID-19 related restriction policies.

Proposed Participating Government Parties:

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

- Australia, IBA facility
- Bangladesh
- China, NAA facility,
- Korea, NAA facility
- India
- Indonesia, XRF facility
- Laos
- Malaysia
- Myanmar
- Nepal
- New Zealand, IBA facility
- Pakistan
- Philippines
- Sri Lanka
- Thailand
- Vietnam

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.

TCDC strategies to be used in the project to enhance regional cooperation involves the cost sharing or cost minimisation by providing a free access of available technology, resources, facilities owned by the member states among developing countries to other developing countries, as well as sharing the technical expertise from well-established and experienced member to other new member states that involved in the project

Will the project design feature partnering arrangements between those advanced and those less advanced in the technology?

This project will manage partnerships between GPs that have advanced technology and are less advanced by providing analytical services for those GPs that do not have the necessary facilities. By providing the technical support in knowledge sharing through scientist exchange, workshop, expert mission/dispatch to less advanced GP, increasing the effective utilization of the funding in this project, as well as increasing the ownership of the project. The relations between GP's which has been built in strong relation from interaction during the previous regional project will be strengthened and one of the modalities in this project and will be to forge relationships with the new GPs. Therefore, this project is designed based on mutual needs and emphasizing growth together, achieving the goals together by partnering arrangements between those advanced and less advanced in technology. The member states consist of advanced and those less advance countries that will enable future partnering arrangement to support each other. Expert mission support between member countries could be implemented by visiting and sharing the knowledge, which will be a good tool to develop good partnership and strengthen the relation between the member countries in this project.

If so, list those expected partnerships.

Several partnership and synergy opportunities that will be developed as one of the keys to the success of this project have been identified. The expected partnership has been established previously between Australia and New Zealand with other member countries, as well as between Indonesia with Malaysia, Nepal, Myanmar and Sri Lanka.

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.

Participants are encouraged to participate based on the capability of each member. Levelling/capacity building will be done within the project to ensure the post-project sustainability. The competency in NATs utilization, data interpretation and analysis are needed and will be enhanced through the project duration. Women and young scientists are set as priority for any capacity building activity in this project.

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.

Have any extrabudgetary funding possibilities been identified?

The project will be implemented by involving national partners who were involved in the previous relevant RCA program. The member states involve in this project already have experience in networking and collaborating with the stakeholders in each country. Several end users include ministries of environmental, local environmental protection agencies, academics, and industry which have been identified in the previous project. Their commitment will be strengthened and extended to enable their involvement in this project by contributing in-kind and other support to achieve the goal of the project. Additional end users including health institutions, and health academics will be needed to support the study on the impact of COVID-19 on the environment as well as in the health relevant impact.

End-users' collaboration will be expanded by several efforts such as intense communication, dissemination of results through seminars or workshops. The project will involve researchers and policy makers in the region and the updated findings of the project will be disseminated to the stakeholders. Workshops and seminars at national and international levels will be organized to create awareness and gain interests particularly on the project goal and findings. In each country, there is national collaborating network to link with the regional network by the project. Build back better framework will be engaged to formulate strategies in order to redesign steps to sustain the air quality benefits.

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.

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

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

NATs is the most suitable technique to provide information on elemental composition of fine air particulate matter with high sensitivity and fast analysis times such as PIXE, XRF etc. It is relatively inexpensive, fast and more efficient compared to the well-established chemical or other conventional methods. The NATs will be the instrumental techniques used in this proposed project to maintain the long-term elemental composition data from the previous RCA relevant program and now focusing on the PM impacts on human health. A comprehensive approach is offered within the project to combine the NATs based compositional analyses, with the data on health and light-scattering technique to improve the understanding on source-apportionment in the region and its impact to the human health, and also reveal the impact of COVID-19 restriction policy/lockdowns in several countries in Asia Pacific region.

Duration of the project:

Indicate the number of years required to complete the project.

3 years

Part 3: National Representative Endorsement for Project Concept

I, as RCA NR of Indonesia, 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 blue ink, consisting of a large, stylized 'S' shape followed by a horizontal line and a small flourish.

Name: Totti Tjiptosumirat

Date: 16 December 2021