

Comments from RAPAC Member on RCA Project Concepts for the 2016/17 TC Cycle

Concept number: #1

Title: Development and upscaling of radiation processed advanced grafted materials for industrial application and environmental preservation

Names/Contact details:

Gaps/problems/needs: The Asia-Pacific region has largest part of the world population. This has caused enormous load on the regional natural resources like water. This part of the world also houses industries like textile, paper, battery, electroplating and foundry industry which has further contributed to depleting of potable water but which are vital to their economy. Thus the need for the region is for devising ways and processes which can mitigate the pollution of water bodies due to effluents from these industries economically. Radiation processed grafted polymer matrices have proven to be versatile, efficient, effective, reliable and reusable systems for removal of dyes and heavy metal ions from aqueous mediums

Why regional: The Asia-Pacific region has largest part of the world population. This has caused enormous load on the regional natural resources like water. This part of the world also houses industries like textile, paper, battery, electroplating and foundry industry which has further contributed to depleting of potable water but which are vital to their economy. Thus the need for the region is for devising ways and processes which can mitigate the pollution of water bodies due to effluents from these industries economically.

Stakeholders/partnerships: Almost all member states.

Overall objective: To develop a protocol to synthesize suitable radiation grafted matrices which can selectively, specifically or in general pickup dyes heavy metal ions pollutants from aqueous bodies.

Objectives analysis: Two major objectives involved will be (i) To develop suitable radiation grafted matrices (ii) To investigate the interaction of the developed matrices with dye/metal ion in aqueous medium and thus to establish separation efficacy of the grafted matrices for desired application.

Role of nuclear and IAEA: Radiation will prove to be effective tool for grafting and IAEA will have important role in bringing the MS together to share their experience, knowledge and need to disseminate the knowledge, expertise and knowledge gathered from this TC project.

Project duration: 2-3 years

Requirement for participation: i) MS countries facing water pollution problem particularly because of type of industries which are considered to be more polluting.
(ii) MS which have active on-going programme on radiation grafting or who wish to venture into it in near future because of their needs.

Participating Member States: All member states

Funding, budget

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17?

Overall comments: The radiation grafted matrices for treatment of effluents from industry and for other industrial application is need of time particularly for Asia-pacific region because of their specific regional needs. Over a period of time it has been proven that in comparison with conventional grafting methods the radiation induced grafting has proven to be an easy and highly efficient process for incorporating desired chemical groups onto various existing polymer substrates. Moreover, brush like grafted polymer chains offer three dimensional spaces for adsorption of dye molecules /metal ions resulting in the high adsorption capacity and fast adsorption kinetics. The reusability of grafted matrix for several cycles is additional advantage for using them for separation application.

Thus development and upscaling of radiation processed advanced grafted materials for industrial application and environmental preservation is appropriate topic for next TC cycle.

Concept number: #2

Title : Elucidating Climate Change Impacts in the Marine Ecosystem thru Nuclear and Isotopic Technologies

Names/Contact details

Gaps/problems/needs : The problem is well conceived and reflects the need for ecosystem monitoring in view of stress due to climate change issues. The proposed project aims to integrate the data so far collected by the two IAEA project RAS 7019 and 7024 and to collect additional data to fill the gaps which are necessary in order to understand ecosystem. However following input can be incorporated in enhance problem faced by Asia pacific region.

- 1) Due to rapid growth of cities along the coastal line in Asia Pacific and release of domestic and industrial waste in coastal water, Marine species are under stress. The reported PH values in coastal area have dropped considerably.
- 2) The change in chronology of terregenous and biogenic metals in coastal marine environment will help to predict future scenario based change in behaviour pattern of marine species brought about by climate change effects.
- 3) Changes in Behavior pattern of marine specious needs to understand in order to take preventive measure as 30 percentage of population in Asia pacific and 50 % of world population depends on the marine resources for their livelihood

Why regional: A regional effort will allow compilation and comparison of potential impacts from countries sharing the same or adjacent marine regions.

Stakeholders/partnerships: *Government and non-government agencies responsible for mitigating impacts of climate change and addressing issues on vulnerability related to climate change. Fisheries Authorities, Marine Biodiversity Agencies*

Overall objective: The objective of project is specific and will enhance the capacity in the region to undertake studies related to climate change issues in coastal marine environment. However to accommodate the data generated from previous two projects the following points can be considered

1. Use nuclear and isotope techniques and biomarkers to establish baseline levels and understand potential sources of nutrients and heavy metal contaminants found in seafood from marine and estuarine environments in the Asia–Pacific region.
2. Establish an Asia-Pacific marine and estuarine contaminant database of sediments and associated aquatic plants and seafood, including comparisons with WHO recommended values.
3. Change in behaviour of marine species based on isotopic ratio e.g. ^{226}Ra and ^{228}Ra and ratio of stable isotopes such as Ba, Sr and Rb

4. Measurement of terrigenous material and chemical biogenic material in the coastal sediment can predict the change due to anthropogenic, weathering and climatic parameters.

Objectives analysis: About 75 percent of the world's poor live in Asia. South Asia alone has over 50 percent of the world's population living below absolute poverty levels. Seafood constitutes source of protein for the people of the region. It provides employment from fishing and processing of seafood products, tourism and marine transport

1. Role of nuclear and IAEA : Expected role of IAEA in terms of contributing Financial/Logistic / Infrastructure and Human Resources by the participating Member States to the project. Further IAEA role in this project can be

- Expert services
- Analytical services
- Hosting of meetings, workshops and training courses, hosting of trainees and visitors
- the transfer of low-cost technology

Project duration: Considering the available input duration of project should be three Years

Requirement for participation: Participants should have previous experience and participated in the previous IAEA /RAS/07/19 and IAEA /07/24

Participating Member States : All participating member of 07 : 24 and some additional member new member contributing in 07/21 can join

Funding, budget US : National Governments of participating MSs should contribute through national project : IAEA contribution of USD 700,000.00 is too high.

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? The project reflects interconnectivity among economic sectors, ecosystems, social development and sustainable use of marine and coastal resources. Through focused scientific activities, suitable mitigation and adaptation strategies can be formulated to address climate change related problems.

Overall comments : The project will meet regional need in order to The project will be making contributions to the following Millennium Development Goals:

Ensure environmental sustainability.

Develop a global partnership for development. Poverty reduction.

About 75 percent of the world's poor live in Asia. South Asia alone has over 50 percent of the world's population living below absolute poverty levels. Seafood constitutes source of protein for the people of the region. It provides employment from fishing and processing of seafood products, tourism and marine transport.

The project should have top priority for 2016-2018 cycle

Concept number #6

Title: Impact of air particulate matter in the RCA region: Quantitative identification of sources and the relationship between major components, light scattering and visibility for managers to better understand/control key components

Names/Contact details

Gaps/problems/needs: Gaps and problems were not reflected properly in the proposed concept paper. More focused points are required.

Why regional: The climatic condition in cultural heritage site is entirely different from the Asia Pacific region. How the results are going to be harmonized?

Stakeholders/partnerships: End user will be limited by restricting the study near the cultural heritage site. Monitoring near urban center is not a new component which can be linked to national monitoring program.

Overall objective: The objective is not clear and no new input. The project should also aim to develop capacity building. Attempts should have been made to further resolve the fine particulate and its quantification. In the objective it was mentioned that new programme will cover urban/populated area. In fact the entire previous RCA air project had covered the urban and populated area so objective should be revised.

Objectives analysis: In view of limited formulation of problem the objective analysis will be limited. How the cultural heritage site inclusion in air quality monitoring will involve wider participation. The indoor sampling in the cultural heritage site may face some constraint with the authority. The output will be limited and harmonization will be difficult.

Role of nuclear and IAEA: Nuclear and analytical techniques have advantage over the other technique in analysis of air particulate. Without proper identification of gaps, the application will not give any fruitful findings apart from routine quantification.

Project duration: Duration of project should be two years.

Requirement for participation: Availability of NAT and sampler should be available in MS

Participating Member States: RCA MS participating in RCA 023 can contribute in this project

Funding, budget: Budget is not defined for the project

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17: NO

Overall comments: The project in the present form is not fulfilling the broader objective required for regional project. How the Heritage sites will have different sources which will change the pollutants in the air. The project needs to be redefined.

Concept number: #7

Title: Delivering the promise of food irradiation to socio-economic development through strengthening promotion, acceptability and trade.

The project title can be changed to - Translating the Benefits of Food Irradiation to Socio-economic Development through Strengthening Promotion, Acceptability and Trade.

Names/Contact details: Appropriately provided

Gaps/problems/needs: Very clearly stated

Why regional: Strengthening trade in irradiated food within the region can help in furthering international trade and such a project can help in interaction between different stake holders.

Stakeholders/partnerships: Clearly stated

Overall objective: Very clear. However, the objective for increasing commercial food irradiation by at least 50% in three years appears to be overambitious.

Objectives analysis: Appropriately provided. Developing greater partnership between various stake holders will also include involve government agencies and law makers which is time consuming. Thus the objectives may not be met in the period proposed.

Role of nuclear and IAEA: Need as a networking agency is clearly brought out

Project duration: Although the period proposed is OK it may require more time to fulfill the stated objectives.

Requirement for participation: Yes all MSs have to be involved

Participating Member States: Appropriate

Funding, budget: Appropriate

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17?: Yes

Overall comments: The project is worth funding as commercialization of food irradiation has to speeded up to improve food security and safety.

Concept number #8

Title: Application of Mutation Techniques to Breed Green Super Crop for Sustainable Agricultural Production

Names/Contact details

Gaps/problems/needs: Availability of advanced mutation facilitates to member states and provision of 'germplasm exchange' in conducting RCA linked research should be mainly addressed to create self-sustainability in the MSs (otherwise, MSs will be dependent on few developed MSs). Monitoring of the physical progress should also be mandatory.

Why regional: Member states in the Asia and the Pacific region have a number of challenges that need to be met for sustainable crop production, hence a regional network based approach could be beneficial.

Stakeholders/partnerships - Member states in the Asia and the Pacific

Overall objective - to enhance the capability of the RCA MSs in effective use of mutation and biotechnological techniques for induction and pyramiding of new mutant genes or germplasm for development of 'green super crop' variety of main food, pulse and oil crops.

Objectives analysis - appropriate and pertinent to the theme of sustainable crop production

Role of nuclear and IAEA - Nuclear techniques have demonstrated high efficiency of mutation induction in crop plants; IAEA can play an important role of strengthening of RCA network, foster exchange of mutant germplasm and provide training/ service to member states.

Project duration - Three years

Requirement for participation - Problems of climate change in Asia and the Pacific region will require integration of advanced mutation techniques into their national programs.

Participating member states - Australia, Bangladesh, China, India, Indonesia, Korea, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam

Funding, budget 150,000 Euro (2016-2017)

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? YES

Overall comments – concept note is well presented with objectives and focus, to address the needs of Asia and Pacific Region.

Concept number #11

Title: The Investigation of Carbon Sink in the Wet Land of Asia Using Isotopic Techniques

Names/Contact details:

Gaps/problems/needs: Studies on the effect of carbon sink in wet land asia should be done in conjunction with the effect on the plants. This is important to know how the change in carbon sink affects the performance of the plant in the broader context.

Why regional: Member states in the Asia and the Pacific region have a number of challenges that need to be met for sustainable crop production, hence a regional network based approach could be beneficial.

Stakeholders/partnerships: Member states in the Asia and the Pacific

Overall objective: To estimate the effect of carbon sink on the plant growth. This will help to devise strategies to take care of plant productivity under the changing climatic condition in future.

Objectives analysis: appropriate and pertinent to the theme of sustainable crop production.

Role of nuclear and IAEA: IAEA can play an important role of strengthening of RCA network, and provide training/ service to member states.

Project duration: 3 Years

Requirement for participation:

Participating Member States: Australia, Bangladesh, China, India, Indonesia, Korea, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Philippines, Sri Lanka, Thailand and Vietnam.

Funding, budget: 200,000 USD

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? Yes

Overall comments: The concept note is not very clear in the terms of approach which will be used to achieve the objectives proposed.

Concept number: #12

Title: “Industrial process monitoring and investigation using advance radiotracer and sealed source technology”

- The concept is provided in the form of RPN and not in Concept Document.
- Fine details are missing e.g. FoA, Regional Project Category etc.

Names/Contact details: Provided. Similar to the project concept #17 submitted by Pakistan.

Gaps/problems/needs: Some details have been provided. However there are some overlap of activities with currently running and newly approved other projects under FoA 18 in the region. Computed tomography (CT) is well covered in two projects RAS1013 and RAS1020 till the end of TC 2016-17. CT is as such an advance NDE tool and applied well to Process diagnostics also. The project proposal should focus more on applications of radiotracers and radioisotopes rather than development of systems. The scope of the project appears too wide with RTD, CT, SPECT, CFD etc. which are all complex technologies and requires commitments at a higher level (Fund, resources and time).

- This concept resembles exactly with the project concept provided by the LCC (Pakistan) in radiotracer technologies.

Why regional: Justifications are OK.

Stakeholders/partnerships: Provided. need more elaborate and explicit details of stakeholders and partners.

Overall objective: OK at this stage.

Objectives analysis: Not provided.

Role of nuclear and IAEA: Justified at RPN level.

Project duration: Two years appears sufficient for this project.

Requirement for participation: Explained.

Participating Member States: 15 MSs indicated.

Funding, budget: Extremely on higher side for a 2-year project. MSs contribution should be specified.

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? To some extent.

Overall comments: The submitted concept in the form of RPN and not in the standard project concept document format resembles exactly in terms of objectives and purpose with the Concept #17 submitted by LCC (Pakistan) for radiotracer technologies. Hence these two concepts are for the same objectives and project duration. Key elements should be merged with the concept #17 and the proposal may be put up for discussion.

Concept number: #13

Title: “New type of freight vehicle inspection system”

Names/Contact details: Not provided. Names of a few RCA MSs have been included. It is not known whether inputs from these or other MSs have been obtained or not.

Gaps/problems/needs: The overall idea of the project concept is good and focuses on an emerging trend of nuclear security aspect encompassing broader national and international ramifications. The issues are not clearly expressed as it is poorly drafted. As it is understood, the scope of the project is huge vis-a-vis the problems defined in the concept paper.

Why regional: The stated problem is more or less of paramount importance to some of the key RCA MSs. It has more to do with national security rather than regional security at this stage. It is understood that some of the MSs in the region already have taken keen interest and invested heavily in this technologically challenging problem area of national defence. It is less likely that these MSs would be willing to share or come forth with costly solutions they achieve in this direction.

Stakeholders/partnerships: Vaguely stated.

Overall objective: The overall objective is too huge and wide to be covered in a RCA project with limited budget. Also no MSs in the region is believed to have generic technology in this area which could be made available to other MSs. Development costs are immense and the scope of an RCA project cannot handle such issues. The problem could better be dealt with a limited CRP.

Objectives analysis: Not provided.

Role of nuclear and IAEA: provided.

Project duration: Project duration is Jan 2016 to Dec 2019 (4 years). It is not clear whether the agency has requested project concepts for period beyond 2017.

Requirement for participation: Not stated.

Participating Member States: List of participating MSs not provided. Role of only one or two MSs institutions is explained. This is possibly due to the fact that other MSs have not been consulted by the proposer. The RPN appears to be vaguely drafted at this stage.

Funding, budget: Fund requested is US\$ 3000000/-. This is too huge for a RCA project. Cost sharing ratio and funding agencies are not elaborated.

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? Not exactly.

Overall comments: The issues are not clearly expressed as it is poorly drafted. The overall objective is too huge and wide to be covered in a RCA project with limited budget. Also no MSs in the region is believed to have generic technology in this area which could be made available to other MSs at this stage. Development costs are immense and the scope of an RCA project cannot handle such issues. The problem could better be dealt with a limited CRP.

Concept number: #14

Title: Application of Electron Beam accelerator for radiation processing

Names/Contact details:

Gaps/problems/needs: Radiation processing of materials has exponentially grown in last 2-3 decades to billion dollar industry in form of wire & cable crosslinking, heat shrinkables, radiation curing, sterilization of medical products etc. However the impact of radiation technology is confined to Europe and other developed countries and most of the MS countries have yet to reap the fruits of this technology in big way because of several prevailing reasons.

Why regional: Earlier because of non-availability of comparatively cheaper EB machine was big hindrance for market players to envisage EB application for radiation processing. But with availability of cheaper EB machine and the economy of MS doing well it is appropriate time that EB based processing will be welcomed in the region for industrial radiation processing applications.

Stakeholders/partnerships: MS countries and there industries

Overall objective: The objective of this project will be to enhance the knowledge of MS about application of EB processing of products for different industrial applications and also about utilization of different types of EB machines and about EB machine itself.

Objectives analysis: To demonstrate to the respective MS industries the utility of EB processing for health care, industry, agriculture and environment

Role of nuclear and IAEA: EB utilization will proof to be effective tool for radiation processing and IAEA will have important role in bringing the MS together to share their experience, knowledge and need to disseminate the knowledge, expertise and knowledge gathered from this TC project.

Project duration: 2-3 years

Requirement for participation

Participating Member States

Funding, budget

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17?

Overall comments: Radiation processing using Electron beam has proven to be boon for several industrial applications because of certain unique properties of EB processed materials. High through puts of EB processing can be tuned to demand from industry. The initial capital investment has also significantly come down with availability of comparatively cheaper industrial EB machines in world market. Lot of research and development work on various aspects of EB processing of material has already been documented through various IAEA programmes in Asia-Pacific region. Some of the MS countries already have EB machine mainly dedicated to wire & cable industry.

The time is ripe for all MS countries to come together to utilize the EB processing technology fruits. Thus it would be appropriate that Application of Electron Beam accelerator for radiation processing is chosen for next TC cycle by support from IAEA so that MS countries can utilize the EB for processing of materials as per needs of their respective countries.

Concept number: #15

Title: Strengthening Food Irradiation Applications through Education and Training in RCA Member States

Names/Contact details: Coordinators/National Project Teams - Not clear

Gaps/problems/needs: Regular training programs are conducted by MSs as a part of the ongoing programs on consumer awareness.

Why regional: As stated above the individual MSs have already implementing such programs and thus at regional level such a proposal has no relevance

Stakeholders/partnerships: Not clearly stated

Overall objective: Not of much relevance at regional level

Objectives analysis: As above

Role of nuclear and IAEA: Not clear and focused

Project duration: Reasonable

Requirement for participation: Does not have much relevance

Participating Member States: RCA member states

Funding, budget: Need for reduction in budget as it appears to be highly unrealistic

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17?: No

Overall comments: The project can be carried out by individual MSs. The concept can therefore be combined with other broader project proposal submitted on similar lines

Concept number: #17

Title: “Diagnosing and optimizing industrial processes using radiotracers and sealed source techniques”

-The project title resembles very much with the title of the ongoing project RAS1012 (2012-14). It is also not specified if the proposed project is a new one or extension of RAS1012.

-FoA needs to be corrected to “18- Radioisotopes and radiation technology for industrial applications (New)”

-Regional Project Category needs to be specified.

Names/Contact details : Full details are provided. This may be updated as some CP may change during TC 2016-17.

Gaps/problems/needs: Problems and needs have been reasonably explained. However there are some overlap of activities with currently running and newly approved other projects under FoA 18 in the region. Computed tomography (CT) is well covered in two projects RAS1013 and RAS1020 till the end of TC 2016-17. CT is as such an advance NDE tool and applied well to Process diagnostics also. The project proposal should focus more on applications of radiotracers and radioisotopes rather than development of systems. The scope of the project appears too wide with RTD, CT, SPECT, CFD etc. which are all complex technologies and requires commitments at a higher level (Fund, resources and time). CP should ensure that at national level, all groups are involved in project teams dealing in these technologies.

Why regional: Sufficient justifications provided.

Stakeholders/partnerships: Generic statement is given. Stakeholder and partnership details should be explicitly provided.

Overall objective: Overall objective is defined. However priority-wise developmental objectives should be provided.

Objectives analysis: Not provided at this stage.

Role of nuclear and IAEA: Role of nuclear technology is explained. However, the exact role of the IAEA is not elaborated.

Project duration: Project duration of two years appears justified. It makes sense in explaining how the intermittent gap of a year between the end of current project RAS1012 and the proposed project start year 2016 will affect the scenario. would it not cause momentum drifting away? If the region is self sustaining in these technologies then why the project is at all required?

Requirement for participation: OK, no comment.

Participating Member States: OK.

Funding, budget: OK at this stage. Needs details at LFM level.

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17? Yes
as per Note Verbale issued by the agency dated 31 Jan 2014.

Overall comments: Though no standard format is issued by the agency so far for the TC 2016-17 concept development, project concept is prepared as per standard format available in PCMF. Explicit and elaborate justifications may be provided on inclusion of many complex technologies in a 2-year project with limited funding possibilities. Specific objectives and deliverables in quantifiable terms should be provided. Similar Concepts submitted by some other MSs should be combined with this proposal.

Concept number: #19

Title: Capacity building in therapeutic application of unsealed radioactive (RA) source in the management of benign and malignant disease.

Names/Contact details: Coordinators/National Project Teams - Not clear

Gaps/problems/needs: The low and middle income country member states will have a huge number of advanced cancer patients in coming decades . The unsealed radioactive (with or without drug) source can be used in metastatic and neuroendocrine cancer (but the prerequisite is a good uptake in diagnostic scans before therapy).

Through sound in practice but at times it is not practiced besides inherent lack of adequate uptake in diagnostic scan the other contributing factor lack of trained manpower, unavailability of the RA source and other infrastructure issues (which also raises the cost unfortunately). Also there are no large randomised data available in the literature on this however encouraging small series results are available

Stakeholders/partnerships: The appropriate long term partnership among the experts and trainee participants is essential for the success of the programme. The requirement and commitment of cost and infrastructure development from member states should be sought before the RCA project can be launched

Overall objective:

Objectives analysis: Objectively it can judged by the number of participants successfully can achieve the goals of the RCA , or proficiency in doing least two different types of unsealed RA sources in two different types of cancers.

Role of nuclear and IAEA: Not clear and focused

Project duration: - 3 Years is appropriate minimum

Requirement for participation: - A team of participants from each member state should constitute is Radio-pharmacist and a physician who are doing the diagnostic procedures successfully. The member states should have a commitment for adequate resource (of many technologies)

Participating Member States– Appropriate: suggest can also include Bangladesh

Funding, budget: Need for reduction in budget as it appears to be highly unrealistic

Does it conform to key requirements for preparation of RCA Project Concepts 2016/17?:
Yes it does, however a suggestion: the RCA training programme should include minimum of a “ hands on programme “of at least 2 days

Overall comments: This project should only be carried out if following things are present.

(1)	Availability of unsealed RA source in adequate amount in the member states (or there is commitment
(2)	The participant personnel should be doing the diagnostic imaging with high level of proficiency