List of RCA Projects for Appraisal

Area: Agriculture

Title	Objective/Rationale	Outputs
1. **Setup of Germplasm Network for Crop Improvement.**	To: i) generate, collect, identify, use, preserve various mutants; ii) exchange techniques on evaluation and preservation of mutants; and iii) form the regional coordination of mutant germplasms.	i) Materials and information exchange and transfer of experiences and techniques in MGN; and ii) Enhanced development of crop improvement by using mutational germplasms. Participating MS: 17 RCA MS excluding SIN
2. **Enhancement of Genetic Diversity for Improvement of Food, Oil and Pulse Crops through Mutation Techniques Combined with Biotechnology.** * related to existing project RAS/4/019	To: i) increase crop productivity; ii) improve biotic and abiotic resistance; iii) improve quality traits; and iv) enlarge application of biotechnology in mutation breeding.	i) Release and extension of improved varieties with high productivity good quality and superior resistance; and ii) Increase in plantation area of improved varieties and crop growers' incomes.
2.1 Mutational enhancement of desired genetic diversity in wheat.	To: i) sustain oil crops and pulses production in the Region through improvement of yield potential; ii) develop high yielding genotype with improved plant architecture and desirable agronomic traits such as early maturity to escape the seasonal abiotic streses; iii) enduce screen and identify mutants with altered protein, seed oil content, fatty acid composition and nutritional quality; iv) induce major disease resistance and environment stress tolerance.	
2.2 Mutation enhancement of desired genetic diversity in oil crops and pulses (soyabean, peanut and mungbean)	To: i) sustain oil crops and pulses production in the Region through improvement of yield potential; ii) develop high yielding genotype with improved plant architecture and desirable agronomic traits such as early maturity to escape the seasonal abiotic streses; iii) enduce screen and identify mutants	Participating MS: BGD, CPR, IND, INS, MAL MON, MYA, PAK, PHI, ROK, SRL, THA, VIE

Title	Objective/Rationale	Outputs
	with altered protein, seed oil content, fatty acid composition and nutritional quality; iv) induce major disease resistance and environment stress tolerance.	
3. **Assessment of Human-Induced Soil Degradation and its Restoration.**	To: i. assess the effect of herbicide application on soil erosion, soil degradation; and ii. initiate the development of located soil core Eu tracer method for soil erosion.	i. Gathering information related to soil degradation; ii. Sharing experiences and techniques developed; and iii. Economic and environmental benefits through knowledge. Participating MS: BGD, CPR, MAL, MON, PAK, PHI, SRL, THA, VIE
4. **Restoration of Soil Fertility and Sustenance of Agricultural Productivity through Better Understanding of the Soil Degradation Mechanism.**	i. Initiation of a regional research network to increase fertilizer use efficiency and maintain soil fertility; ii. Development and use of new types of fertilizers; iii. Understanding of mechanism of soil degradation and spatial distribution of soil quality in different landscapes iv. Model development for recovering and rebuilding soil fertility in desertification land; v. Understanding of mechanism of soil complex pollution and its effect on soil and crop quality; and vi. Optimizing agricultural practices for increasing crop yield and improving crop quality on polluted soil.	i. Better technique package for use of fertilizers transferred to farmers on a relatively large scale; ii. Number of new types of fertilizers such as controlled-released fertilizer, low-costs fertilizers and bio-fertilizers developed; iii. Fast determination system for environmental nuclide and nutrient in desertification soil and assessment of spatial distribution of soil quality; iv. Identification of proper agriculture practices for recovering and rebuilding of soil fertility; v. Development of effective agricultural practices for increasing crop yield and improving crop quality on polluted soil; vi. Regionally trained group of scientists on soil degradation, assessment of spatial distribution of soil quality and soil fertility monitoring; and Research publications. Participating MS: BGD, CPR, IND, MAL MON, MYA, PAK, PHI, SRL, THA, VIE

Title	Objective/Rationale	Outputs
5. **Application of Food Irradiation on Food Security, Safety and Trade.** * related to existing project RAS/5/034	To: i. Reduce post-harvest loss; ii. Promote safety of meat and poultry produced by irradiation treatment; and iii. Facilitate the implementation of related regulations of food irradiation, especially on the irradiation as a phytosanitary treatment.	i. Organise trade test of irradiated food; ii. Exchange or transfer of experience and technology for successful commercial application of food irradiation; and iii. Establish a well trained group of scientists and workers for food irradiation application. Participating MS: BGD, CPR, IND, INS, MAL, PAK, PHI, ROK, SRL, THA, VIE
6. **Improving Animal Productivity and Reproductive Efficiency through Nuclear Related Techniques.** * related to existing project RAS/5/035	To: i. Promote exchange of expertise, research results and experiences among institutions; ii. Enlarge feed base by using seed-bearing or fodder-producing plants and trees, capable of growing in poor soils and to manipulate feed base by hay and silage making process; iii. Extend feed supplementation techniques to extension services and farmers; iv. Improve animal reproductive efficiency through more efficient AI guided by RIA for progesteron; v. Improve disease diagnosis through ELISA; and vi. Develop and apply the integrated farm management strategies.	i. Result in sustainable feeding strategies based on non-conventional feed resources which do not compete with human food, resulting in improved milk and meat production; ii. Use of these feed resources to lead to control of soil erosion, diversify traditional agriculture, conserve biodiversity and create jobs; and iii. Improved AI services and establishment of routine farmer services such as early diagnosis of non-pregnancy and infertility. (Feed Supplementation) Participating MS: CPR, INS, MAL, MYA, PAK, PHI, SRL, THA, VIE (Artificial Insemination) Participating MS: BGD, CPR, INS, MAL, MYA, PAK, PHI, SRL, THA, VIE
7. **Production of FMD Antigen and Antibody ELISA Reagent Kit Linked to Quality Control Programme.**	To: i. Produce antibodies and inactivated antigens to four serotypes of FMD virus; and ii. Assembly as reagent kits for supply of laboratories in MS.	i. Supply of regionally produced FMD diagnostic reagent test kids, inocuity tested and quality assured together with SOPS for their use; ii. Trained scientist at National Laboratories in use of FMD kits; and

Title	Objective/Rationale	Outputs
		iii. More effective diagnosis ad surveillance of FMD Participating ME: BGD, MAL, MYA, PHI, THA, VIE

Area: Energy and Research Reactors

Title	Objective/Rationale	Outputs
1. **Improvement of Research Reactor Operation and Utilization.**	i. Enhancement of neutron beam utilization; ii. Sharing of facilities, equipment, and resources; iii. Reliable in-service inspection; iv. Core management technology to enhance the utilization of research reactors; v. Technology for NTD; and vi. Aging Management.	i. Enhancement of neutron beam application of research reactors; ii. Advantage from sharing of research reactors, facilities and equipment among MS; iii. Prolong the reactor operation period through the in-service inspection and analysis of reactor components; iv. Improvements of research reactor utilization and conservation of financial resources by better reactor core management; and v. Trained personnel through training courses and regional workshops. Participating MS: AUL, BGD, IND, INS, MAL, PAK, PHI, ROK, THA
2. **Role of Nuclear Power and other Energy Options in Mitigating Greenhouse Gas Emissions**	To: i) to assist RCA MS in conducting GHG abatement cost studies and assessing the potential role of nuclear power as a clean Development Mechanism under the Kyoto Protocol; ii) developing GHG emission projections; iii) evaluating GHG abatement options; iv) analyzing the potential role of nuclear power as a CDM; v) identifying the cost-effectiveness of alternative abatement options; vi) assessing other costs and benefits of alternative abatement options; and vii) comparing and ranking the various GHG abatement options	i) new knowledge and tools acquired through the project will be used to enhance the possibility of MS to participate in the climate change debates; ii) will help the MS assess the relative merits of nuclear power as a CDM Participating MS: 17 RCA MSs
3. **Promotion of Nuclear Power Generation in the**	To: i. Increase *public and political awareness* through dissemination of	Promotion of Nuclear Power Generation by achieving the

Title	Objective/Rationale	Outputs
East Asia and the Pacific Region.	information about safety economics, environment and waste disposal; ii. Support of idea "*safety culture*" entailing training/education of personnel, establishing procedures and norms; iii. Organization of workshops to share knowledge and help develop *infrastructure* in developing MS; iv. Establish a common strategy in the region for programme implementation;	objectives and rationale as stated. Participating MS: BGD, CPR, IND, INS, JPN, MAL, MYA, PHI, ROK, SRL, THA, VIE

Area: Industry and Environment

Title	Objective/Rationale	Outputs
1. **Process Diagnostics and Optimisation in Petroleum/Chemical Industry Using NDT, Radiotracers and Sealed Sources.**	i. To update regional capability for online troubleshooting and process control using isotope techniques; ii. To achieve capability for NDT, RLA and corrosion detection in petrochemical plants, tomography of columns and advanced scanning; and iii. RTD with right tracers for troubleshooting and process control.	i. Trained personnel for providing nuclear technology service to the petroleum/ chemical industry; ii. Established connections between national personnel and RRUs, suppliers of radiotracers, sources, equipment, etc; iii. Comprehensive list of regional industries already benefited by the use of nuclear techniques along with quantification of such benefits; iv. List of organizations specialized in the applications of nuclear techniques; v. Economic impact in terms of reducing the downtime of the plants will be visible and quantifiable; vi. Positive management impact is related to more reliable plant operations with less stress on plant engineers; and vii. Process optimization will mean reduced burden on the environment due to better pollution control. Participating MS: 17 RCA MS

Title	Objective/Rationale	Outputs
2. **Optimisation of Mineral Resources Recovery Using Low Radioactivity and Portable Nucleonic Gauges.**	i. To demonstrate safe NCS Technology for solving optimization problems; ii. Through low radioactivity/portable gauges NCS technology, immediate economic advantages should be produced and advanced and safer technology will be shared with MS.	i. Personnel at the national nuclear institute able to backstop and advise on advanced low radioactivity/portable gauges NCS technology; ii. Personnel in national industries able to assess suitable of the application of advanced low radioactivity/portable gauges NCS technology to their specific technical and economic needs; iii. Introduction of safe and use-friend nuclear technology into specific regional industrial processes, while avoiding the need to comply with more stringent controls associated with the use of larger radioactive sources; iv. Reduction in the risk and possibility of public health problems from misuse and misplacement of higher activity radioisotope sources; and v. Contribution to the increase use of nuclear technology through the utilization of lower levels of ionizing radiation. Participating MS: AUL, CPR, IND, INS, MON, NZE, PAK, THA, VIE
3. **Development of Polymer Based Dosimeters for Electron Beam Radiation Processing.**	To: i. Demonstrate the production of useful products from natural polymer using radiation processing; ii. Increase utilization of natural polymers; and iii. Produce value added product.	i. Improvement of degradation of cellulose for viscose rayon; ii. Production of plant growth polymer; iii. Production of natural fruit preservation; and iv. Production of hydrogel. Participating MS: BGD, CPR, IND, INS, JPN, MAL, MYA, PHI, ROK, SRL, THA, VIE
4. **Demonstration Facilities for Disposal of Hospital**	To demonstrate: i. Radiation treatment of hospital waste	To demonstrate: i. Radiation treatment of

Title	Objective/Rationale	Outputs
Waste and Treatment of Waste Waters Using Radiation. * related to existing project RAS/8/076	for safe disposal; ii. Technique for safe disposal of waste water with gamma and EB radiation; and iii. Design of under-beam equipment of EB radiation treatment of waste waters.	hospital waste for safe disposal; ii. Technique for safe disposal of waste water with gamma and EB radiation; and iii. Design of under-beam equipment for EB radiation treatment of waste waters. Participating MS: 17 RCA MS excluding NZL
5. **Development of Polymer Based Dosimeters for Electron Beam Radiation Processing.**	To: i. Develop dosimeters that can be used for monitoring and process control of a wide range of radiation processing applications using a single EB accelerator that are currently being used in RCA MS; ii. Set up of a regional inter-comparison dosimetry laboratory.	i. Improvement of degradation of cellulose for viscose rayon; ii. Production of plant growth polymer; iii. Production of natural fruit preservation; and iv. Production of hydrogel. Participating MS: BGD, CPR, IND, INS, JPN, MAL, MYA, PHI, ROK, SRL, THA, VIE
6. **Use of Isotopes in Dam Safety and Dam Sustainability.**	To: i. Promote the use of environmentally safe isotope techniques for developmental (socio-economic) purposes; and ii. Identify end-users and draw up a strategy for adaptation and transfer of technology to end-users.	i. Expand use of isotope methods in dam management; and ii. Impact made in terms of cost savings as well as dam safety. Participating MS: AUL, CPR, IND, INS, MAL, PAK, PHI, ROK, SRL, THA, VIE
7. **Sustainability of Geothermal Energy Resources and Management of Environment through Isotope Techniques.** ***** related to existing project RAS/8/075	To study the aims to:: i. Determine the distribution and identify the origin of different gas components in PHI geothermal fields; ii. Model the evolution of gaseous species in geothermal fluids during exploitation of the resource; iii. Enhance the capability of PNOC EDC personnel in the application of isotope techniques in reservoir management; and iv. Development appropriate reservoir management strategies to sustain the supply of steam and the operation of geothermal power plants.	i. Revision of scientific models of operating geothermal fields; and/ ii. Formulation of appropriate reservoir management strategies to address the changes in fluid character and ensure sustainable geothermal power generation. Participating MS: Not documented

Area: Health

Title	Objective/Rationale	Outputs
1. **Distance Learning in the Applied Sciences of Oncology.**	To: i. Contribution to the sustainable development and treatment of disease using ionising radiation through improved regional training skills; and ii. Provision of clinically relevant teaching for specialist medical trainees on the applied sciences of oncology using distance education techniques via the internet	i. Production of the distance education course; and ii. Trial of the distance education materials. Participating MS: AUL, BGD, CPR, IND, JPN, MAL, MON, MYA, ROK, THA, VIE
2. **Upgrading Immunoassay Capabilities.**	To: i. Assist in the widespread use of immunoassays in the MS; ii. Help in the early diagnosis of several disease and improving the healthcare system; iii. Develop primary reagents such as monoclonal antibodies, development of technology for the preparation of tracers, formulation of immunoassay procedures and quality assurance of the kits; and iv. Help in the development of primary agents in the MS.	i. Significant improvements in the areas of: • Preparation of primary reagents for RIA and IRMA; • Preparation of monoclonal antibodies; • Quality assurance of immunoassay kits. Participating MS: to be further developed.
3. **Radiation Sterilization of Tissue Grafts. (for extension to 2002)**	To: i. Contribute to the improvement of health care in MS through the use of ionizing radiation in the production of tissue grafts and reduce the dependence on imported synthetic products; and ii. Improve public and professional awareness of radiation and tissue banking;	i. National programmes for professional and public awareness, Media packs, regional newsletter and recorded best practices; ii. Trained users of radiation sterilized tissue grafts; iii. Experienced managers in the safe use of radiation; iv. Competent technologists with practical and theoretical experience; and v. Successful postgraduates and formulated postgraduate curriculum. Participating MS: BGD, CPR, IND, INS, MAL, PAK, PHI, SIN, SRL, THA
4. **Development of Therapeutic Radio-pharmaceuticals for Bone Pain Palliation and Radio-synvectomy.**	To: i. Assist in the widespread use of therapeutic radiopharmaceuticals in the MS; and ii. Improve the quality of life of patients suffering from cancer and rheumatoid arthritis.	i. Improvements in the treatment of both cancer and rheumatoid arthritis patients. Participating MS: to be further developed.

Title	Objective/Rationale	Outputs
5. **LDR and HDR Brachytherapy in the Treatment of Cervical Cancer.**	To: i. Contribute to the improvement and skill in the use of LDR and HDR treatment of cancer of the cervix; ii. Improve brachytherapy in MS in need; and iii. Construct the database for various prognostic factors.	i. Improved treatment results; ii. Establish standard protocols; iii. Trained manpower; and iv. Training of RCA MS. Participating MS: BGD, CPR, IND, MAL, MYA, PAK, PHI, ROK, SRL THA, VIE

Area: Radiation Protection

Title	Objective/Rationale	Outputs
1. **Enhancement and Harmonization of Radiation Protection**.	To: i. Establish specific legislation and regulations for effective sources control by a regulatory authority, especially systems for notification, authorization and control of radiation sources; and ii. Establish an effective regulatory control over transport of radioactive materials including an appropriate competent authority and regulations consistent with IAEA guidelines on safe transport of radioactive materials. iii. Reach common understanding on principles, practices and measurement techniques recommended by the IAEA, ICRP and ICRU; iv. Improve regulation, control, safe handling and storage of radioactive wastes; and v. Development of distance learning materials in radiation protection for use in training and accreditation of users of radioactive materials.	i. Regionally harmonized regulatory systems or control of sources consistent with the BSS; ii. Common implementation of the principles, practices and measurement techniques recommended by the IAEA, ICRP and ICRU; iii. Consistency in practices and regulation for transport of radioactive wastes; iv. Regionally unified policies for the safe management of radioactive wastes; and v. Distance learning material in radiation protection for use in training and accreditation. Participating MS: 17 RCA MS