

Regional Project Concept Template (Category A)

The information contained in this template should be uploaded to the PCMF IT platform by the Chair of the relevant regional cooperative agreement or the NLO of the Member State submitting the concept by **31 May 2014** at the latest. Based on this information the IAEA will assess whether this project concept is in line with the TC quality criteria and requirements. Concepts positively appraised will be further developed into full project documents during the design phase.

Region:	Latina America and the Caribbean		
Regional/Cooperative agreement (if applicable)		Priority no. given by regional/cooperative agreement (for concepts proposed under the auspices of regional cooperative agreements)	
Title	IMPROVING THE COMPETITIVENESS, RENEWABLE NATURAL RESOURCES USE AND ENVIRONMENTAL IMPACT REDUCTION OF REGIONAL INDUSTRIES WITH RADIATION TECHNOLOGY APPLICATION		
Field of activity	Radiation and Radioisotope Technologies		
Regional project category¹	<input type="checkbox"/> <i>Transnational</i> <input checked="" type="checkbox"/> Regional standard setting <input type="checkbox"/> <i>Capacity building for developing countries</i> <input type="checkbox"/> <i>Joint TC activities with a regional or international entity</i>		
Names and contact details of project counterparts and counterpart institutions (starting with the main counterpart)	<p>The aim is to involve as many countries as possible in the region that are associated with ARCAL and the IAEA (public organizations, universities and research institutions and scientific and technological development related to the themes of the project):</p> <ul style="list-style-type: none"> ▪ Comissão Nacional de Energia Nuclear (CNEN) - BRASIL Instituto de Pesquisas Energéticas e Nucleares (IPEN) Wilson Aparecido Parejo Calvo (wapcalvo@ipen.br) - BRA-TR.01 Head of Products and Services, Radiation Technology Center, Telephone: (+55 11) 3133-9762, www.ipen.br Áurea Beatriz Cerqueira Geraldo (agerando@ipen.br) - BRA-TR.05 <u>Centro de Desenvolvimento da Tecnologia Nuclear (CDTN)</u> Rubens Martins Moreira (rubens@cdtn.br) <u>Instituto de Engenharia Nuclear (IEN)</u> Luis Eduardo Barreira Brandao (brandao@ien.gov.br) ▪ Comisión Nacional de Energía Atómica y Universidad Nacional del Comahue - ARGENTINA Celina Horak (horak@cae.cnea.gov.ar) - AR-TR.02 Andrea S. Docters (docters@cae.cnea.gov.ar) Carlos Somaruga, Facultad de Ingeniería (csomarug@neunet.com.ar) ▪ Instituto Boliviano de Ciencia y Tecnología Nuclear – BOLIVIA Luis Enrique Romero Bolaños (l_romero@ibten.gob.bo) ▪ Comisión Chilena de Energía Nuclear (CCHEN) - CHILE Francisco Javier Díaz Vargas (fdiaz@cchen.cl) Juan Miguel Espinoza Berdichevsky (jespinoza@cchen.gov.cl) - CHI-TR.04 ▪ Servicio Geológico Colombiano - COLOMBIA Azarías de Jesús Moreno Machado (amoreno@ingeominas.gov.co) ▪ Instituto Tecnológico de Costa Rica (ITCR) - COSTA RICA Mario Antonio Conejo Solís (mconejo@itcr.ac.cr) 		

¹ See the document entitled "Policy and Procedures for TC Regional Projects" at:
http://pcmf.iaea.org/DesktopModules/PCMF/docs/2014_15_Docs/notes/Regional_TC_Project_Policy.pdf.

	<ul style="list-style-type: none"> ▪ Agencia de Energía Nuclear y Tecnologías de Avanzada (AENTA) y Centro de Aplicaciones Tecnológicas y Desarrollo Nuclear (CEADEN) - CUBA Ramón Lorenzo Rodríguez Cardona (ramon@aen.energia.inf.cu) Manuel Rapado Paneque (rapado@ceaden.edu.cu) - CUB-TR.06 Enrique Francisco Prieto Miranda (efprieto@ceaden.edu.cu) ▪ Ministerio de Electricidad y Energía Renovable y Escuela Politécnica Nacional - ECUADOR Marco Oswaldo García Linto (marco.garcia@meer.gov.ec) Francisco Xavier Saldado Torres (francisco.salgado@epn.edu.ec) - ECU-TR.03 Raúl Marcelo Gallegos González (marcelo.gallegos@epn.edu.ec) ▪ Universidad de El Salvador - EL SALVADOR Francisco Antonio Alarcón Sandoval (alarconfrancisco@gmail.com) ▪ Ministerio de Energía y Minas (MEM) - GUATEMALA Oliver Antonio Gutiérrez Miranda (maplerojo@yahoo.com) ▪ Ministère du commerce et de l'industrie - HAITI Monorde Civil (monordecivil@hotmail.com) ▪ Instituto Nacional de Investigaciones Nucleares (ININ) - MÉXICO Gustavo Molina (gustavo.molina@inin.gob.mx) Miguel Irán Alcérreca Sánchez (miguel.alcerreca@inin.gob.mx) ▪ Universidad Tecnológica do Panamá - PANAMÁ Reinhardt Pinzon (reinhardt.pinzon@utp.ac.pa) ▪ Universidad Nacional de Asunción - PARAGUAY Rodolfo Tadeo Acosta Cabello (rtac@qui.una.py) ▪ Instituto Peruano de Energía Nuclear (IPEN) – PERÚ Carlos Raúl Sebastián Calvo (csebastian@ipen.gob.pe) Sr. Jorge Leonidas Condori Cari (jcondori@ipen.gob.pe) ▪ Universidad de Puerto Rico – PUERTO RICO Departamento de Química, Mayagüez ▪ Universidad Autónoma de Santo Domingo y Fenwal International - REPÚBLICA DOMINICANA Julio César Marmolejos (jmarmolejos2@hotmail.com) Fausto Alberto Cruz Rozón (fausto.cruz@fenwalinc.com) ▪ Universidad Católica del Uruguay y Comité Nacional de Irradiación - URUGUAY Manuel Raúl Burgos Lezama (mburgos@ucu.edu.uy) Aníbal Víctor Abreu Castillo (aabreu@latu.org.uy) ▪ Universidad Central de Venezuela e Instituto Venezolano de Investigaciones Científicas - VENEZUELA Hector Constant (hector.constant@gmail.com) Jaime de la Cruz Jaspe López (jjaspe@ivic.gob.ve)
<p>Analysis of regional Gap/problems/needs</p>	<ul style="list-style-type: none"> ▪ Need to identify, delineate and disseminate specific and strategic opportunities and challenges in the region for the promotion and use of Radiation and Radioisotope Technologies in priority applications. ▪ Need to increase the competitiveness of regional industries and reduce environmental impact. ▪ Improve the use of renewable natural resources, non-toxic in the region of Latin America and the Caribbean for sustainable development.
<p>Why should it be a regional project?</p>	<p>Beyond the need of improving the use of renewable natural resources and the competitiveness of regional industries is also very important the preservation of the environment for sustainable development, which is</p>

	<p>affected by pollution originating from urban and industrial centers. In this sense, the countries of Latin America and the Caribbean have regulations, policies and programs to reduce this effect.</p> <p>The pollution of surface and groundwater, oceans, atmosphere and soil, affects the population in areas near industrial sites. The preservation of these sources is essential to the quality of life and ecosystem.</p> <p>Industrial activities in participating countries of the project directly impact the environment. The companies and government authorities aware of the necessary coexistence between industries and environment, and with reference to the need to develop the industry without affecting natural resources, making management models incorporate integrated decision.</p> <p>Nuclear technology and its applications are tools that help optimize industrial processes and improve the environmental performance of human activities on the ecosystem. This project is relevant because nuclear technology can be conveniently inserted into cleaner production strategies to diagnose and technological risks.</p>
<p>Stakeholder analysis and partnerships</p>	<ul style="list-style-type: none"> ▪ Public Organizations (WHO, UNIDO, FAO) and private issues related to the project, particularly those related to the International Atomic Energy Agency (IAEA). ▪ Industries of mining, metallurgical, oil, agribusiness, food and water supply and sewage treatment, in order to improve the quality of products and services offered; helping to reduce production costs and energy costs, improving human health, protecting the environment. ▪ Agricultural producers and food processing industries. ▪ Business and strategic industries of member countries. <p>The beneficiaries of the project are universities, research, scientific and technological institutions, and general population of the participating countries, taking into account goals that are considered as the use of renewable natural resources, sustainable economic development and welfare of the population in harmony with the environment.</p>
<p>Overall objectives (or developmental objective)</p>	<ul style="list-style-type: none"> ▪ Reduce the impact of industrial activity on the environment through technology applications with radiation (electron beam, gamma rays and X-rays), and inspection technologies with radiotracer and radiation sealed sources, improving the use of renewable resources and competitiveness in the fields of economic, technological and strategic interest in the region. ▪ Disseminate in regional and national levels, new applications of nuclear technology, including the production of radioisotopes for industrial sector, radiation technologies (development and installation of new irradiation facilities, modification of polymeric materials, advanced materials development, nanotechnology and value-added products from natural polymers, different designs and food irradiation equipment aiming at technology transfer and implementation of commercial facilities, radiation sterilization of medical disposables, disinfestation and disinfection of books, documents and agricultural products, pest control, treatment of industrial and domestic effluents, other), the establishment of quality control and good irradiation practice . Moreover, diagnostic techniques for optimizing the control of industrial processes (industrial tomography, neutron generators, nanotracers, generators radiotracer generators, tracking of radioactive particles and radiation detectors of high efficiency, other).

	<ul style="list-style-type: none"> ▪ Develop a Regional Reference Plan in Latin America and the Caribbean on the use of technologies with radiation and radioisotope applications, identifying the opportunities, benefits, perspectives, challenges and training needs of human resources in the region, as well as the main strategies to implement the expansion of these applications. ▪ Promote the strengthening of Centers of Excellence and local Laboratories of Reference, teaching undergraduate and graduate courses, technical training by type of application, exchange of experiences, training of qualified human resources and technology transfer between the participating countries. With the website, www.ipen.br/arcad, countries integrate a database related with applications in radiation technologies in the fields of water, environment, advanced materials, nanotechnology, medicine, tissue engineering, disinfestation and disinfection of books and documents, processes and industrial production, natural resources and inspection technologies, among others. It will facilitate the exchange of technical information provided by the different countries, resulting from new applications, which will strengthen the transfer of knowledge between participants. ▪ Develop national and regional models for the management of marketing and applications for technologies with radiation (electron beam, gamma rays and X-rays), and inspection technologies with radiotracer and radiation sealed sources in industry (radiation processing of materials, production and tracer/sealed sources applications, gamma scanning and/or neutron backscattering applications and nucleonic control systems, other). Nuclear technology is a powerful tool that helps to optimize industrial processes and improve the environmental performance of the industry in relation to the ecosystem, for better use of water, energy resources, natural resources and the mitigation of environmental pollution, from solutions that are not at the end of the process. ▪ Establish a system of training and certification of persons in the region. This would be done through the creation of an international scientific society responsible for recognizing and recording professionals working in the field of radiation technology and inspection technologies applications in Latin America, the Caribbean and around the world to be the focus of world conferences and be the certifying body for the training system. The scientific society would create training systems of the major activities in radiation technology applications (study programs with the minimum requirements in terms of training time, and examination certificates registered in recognized centers of excellence in the IAEA). The international scientific society will be officially located in Vienna, Austria.
Analysis of objectives	<p>It is a technology project with radiation and environmental focus, which includes the guidance of the Regional Strategic Plan for the period 2016-2021:</p> <ul style="list-style-type: none"> ▪ Improve the competitiveness and quality of products of regional industries. Develop and install new irradiation facilities, and expand the applications of electron beam, gamma rays and X-rays in the region. ▪ Strengthen national training through training by type of application of radiation technologies and inspection technologies in different applications (medicine, nanotechnology, industry, environment and research). ▪ Reduce the environmental impact (usage, availability and pollution of water resources, metal contamination in soil, groundwater and surface water contamination and other environmental compartments and food;

	<p>overexploitation of living resources including soil and habitat modification and communities, and most relevant global changes to regional scale) by radiation technologies and inspection technologies.</p> <ul style="list-style-type: none"> ▪ Improve the use of renewable natural resources for sustainable development. ▪ Reduce losses of perishable food products, with reduced use of chemicals preservatives and highly polluting to reduce the microbial load or as agents of quarantine treatment, and expand the commercial applications of food irradiation by electron beam, gamma ray and X-ray. 									
Role of nuclear technology and the IAEA	<p>The coordinators of proposed project confirm that in the Latin America and the Caribbean region there are developed capabilities for applications of nuclear technologies in mining, metallurgical, oil industries, agroindustries, food industries and wastewater treatment companies.</p> <p>To take full advantage of the benefits of radiation technologies and inspection technologies is essential to have the necessary infrastructure and qualified and trained personnel. Coordinators, with advice, assistance and support of the IAEA, corroborate to promote regional availability of products and services necessary to extend the benefits of radioisotopes and radiation technologies to large segments of the population of the Member States development. In particular, together the IAEA, achieve self-sufficiency in the production of radioisotopes and radiopharmaceuticals, strengthen quality control practices and regulatory compliance and facilitate the development of human resources.</p>									
Project duration	4 years. The development of different projects with specific applications for countries will be in 2018-2019.									
Requirements for participation	Counterpart institutions in Member States which applies radiation technology (electron beam, gamma rays and X-rays), and radioisotope technology with radiotracer and radiation sealed sources.									
Participating Member States	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, El Salvador, Ecuador, Guatemala, Haiti, Mexico, Panama, Paraguay, Peru, Puerto Rico, Dominican Republic, Uruguay and Venezuela.									
Funding and project budget	<p><i>Provide an estimate of the total project costs and the funding expected from each stakeholder:</i></p> <table border="1"> <thead> <tr> <th></th> <th>Euro</th> <th>Comment</th> </tr> </thead> <tbody> <tr> <td><i>Government cost-sharing</i></td> <td></td> <td>(to be sent to the IAEA)</td> </tr> <tr> <td><i>Counterpart institution(s)</i></td> <td>1.350.000,00</td> <td> Resources provided by the participants in the project countries, according to the IAEA information regarding: <ul style="list-style-type: none"> a) Experts / invited speakers sent abroad by the Agency (IAEA). b) Local cost of regional event in the country (working groups / training courses / workshops / seminars). c) Local costs in national events (Business Plan). d) Fellow whose local costs are borne by the country. e) Publications. f) Create and / or update (www.ipen.br / arcal) the database (WEB page). g) Local cost of Headquarters Technical Coordination Meeting (OCTA). h) Repair of equipment / instruments. </td> </tr> </tbody> </table>		Euro	Comment	<i>Government cost-sharing</i>		(to be sent to the IAEA)	<i>Counterpart institution(s)</i>	1.350.000,00	Resources provided by the participants in the project countries, according to the IAEA information regarding: <ul style="list-style-type: none"> a) Experts / invited speakers sent abroad by the Agency (IAEA). b) Local cost of regional event in the country (working groups / training courses / workshops / seminars). c) Local costs in national events (Business Plan). d) Fellow whose local costs are borne by the country. e) Publications. f) Create and / or update (www.ipen.br / arcal) the database (WEB page). g) Local cost of Headquarters Technical Coordination Meeting (OCTA). h) Repair of equipment / instruments.
	Euro	Comment								
<i>Government cost-sharing</i>		(to be sent to the IAEA)								
<i>Counterpart institution(s)</i>	1.350.000,00	Resources provided by the participants in the project countries, according to the IAEA information regarding: <ul style="list-style-type: none"> a) Experts / invited speakers sent abroad by the Agency (IAEA). b) Local cost of regional event in the country (working groups / training courses / workshops / seminars). c) Local costs in national events (Business Plan). d) Fellow whose local costs are borne by the country. e) Publications. f) Create and / or update (www.ipen.br / arcal) the database (WEB page). g) Local cost of Headquarters Technical Coordination Meeting (OCTA). h) Repair of equipment / instruments. 								

			<p>i) Sending reagents / radioactive sources / other materials / radioisotopes.</p> <p>j) Performing services (material irradiation).</p> <p>k) Time worked as a contribution to the program (National Coordinator, Project Coordinator and Specialist).</p>
	<i>Other partners</i>	550.000,00	<p>1) National Projects</p> <p>2) Resources provided by the participants in the project countries, according to the IAEA information regarding:</p> <p>a) Expenses of professionals who have provided help in implementing any project activity expertise in the country</p> <p>b) Internal Transportation</p> <p>c) Travel abroad to meetings not borne by the Agency, inputs / costs incurred, not paid by the Agency</p>
	<i>IAEA Technical Cooperation Fund (TCF):</i>	<i>Fellowships / Scientific visits / Training courses/ Workshops</i>	800.000,00
		<i>Experts</i>	
		<i>Equipment</i>	
	TOTAL		2.700.000,00