

Interregional Project Concept Template (Category A)

29

The information contained in this template will be uploaded to the PCMF IT platform by the Division of Programme Support and Coordination by **30 August 2012** 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.

Title	LEU Based Production of Molybdenum-99
Field of activity	Radioisotope production for medical purposes
Interregional project category¹	<input type="checkbox"/> Transregional <input type="checkbox"/> Global standard setting <input checked="" type="checkbox"/> Capacity building for developing countries <input type="checkbox"/> Joint TC activities with an international entity
Analysis of interregional Gaps / Problems/needs	<p><i>Give an in-depth analysis of the major problems/needs to be addressed by the project, as well as of their causes and effects; and explain why they are of an interregional nature. Refer to past national/regional or interregional efforts made in addressing these problems/needs, if any, and explain how the current project proposal builds upon them. Attach any supporting documents (e.g. feasibility studies, texts of interregional programmes that are relevant to the proposed project).</i></p> <p>The world has faced severe shortage of ⁹⁹Mo in past and may happen again. It is therefore extremely important to produce ⁹⁹Mo in those countries where research reactors are in operation. Pakistan is also one of them and has great potential to produce and supply various radioisotopes to nuclear medical centres. Pakistan successfully completed research and development activities regarding ⁹⁹Mo production using HEU targets. For conversion of production of Mo-99 to LEU targets, Pakistan needs support of IAEA and other ⁹⁹Mo producers to produce Mo-99 on large scale. Pakistan has already participated in a CRP entitled "Establish techniques for small scale indigenous molybdenum-99 production using LEU fission or neutron activation".</p>
Why should it be an interregional project?	<p><i>Indicate why it is better to address these problems/needs through an interregional project (as opposed to a regional or national one).</i></p> <p>As there are very few countries worldwide which are producing this particular isotope and Pakistan is new in this era so it is better to attain support from inter regional countries than regional countries.</p>
Stakeholder analysis and partnerships	<p><i>Describe the stakeholder analysis conducted, specifying all the interested or affected parties, end users, beneficiaries, sponsors and partners identified, with clearly defined roles for each entity.</i></p> <p>Pakistan Atomic Energy Commission will be the sole stakeholder. Various nuclear medical centre and R & D institutes will be the end users.</p>
Overall objective (or developmental objective)	<p><i>State the objective to which the project will contribute, and demonstrate its linkage with a broader development goal or priority. It has to be in line with the problems/needs identified.</i></p> <p>Production of ⁹⁹Mo for medical purposes using LEU targets will be established. It will be used locally and may be supplied to other countries. Production of Mo-99 using LEU targets will also address nuclear proliferation issue.</p>
Analysis of objectives	<p><i>Draw up an objective tree to highlight the hierarchy of objectives as well as the cause-effect logic that this project is expected to achieve.</i></p>

¹ See the document entitled "Policy and Procedures for TC Interregional (INT) Projects" at: http://pcmf.iaea.org/DesktopModules/PCMF/docs/2014_15_Docs/notes/INT_Policy.pdf

(32)

	<ul style="list-style-type: none"> ➤ Feasibility of the project ➤ Basic Engineering Design ➤ Fabrication of Equipments ➤ Erection ➤ Installation of Plant ➤ Cold and Hot Commissioning of plant ➤ Production of Mo-99 ➤ Supply to nuclear medical enters 																											
Role of nuclear technology and the IAEA	<p>Indicate the 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? Does it have a comparative advantage over non-nuclear techniques? What specific role is the IAEA expected to play in the project?</p> <p>⁹⁹Mo/^{99m}Tc generators are used widely for diagnostic studies in patient care. Fission of LEU target plates at research reactor PARR-I will be the technique for the ⁹⁹Mo production. Other methods are also available like neutron activation but producing ⁹⁹Mo at large scale is only possible through fission of LEU target plates.</p> <p>Role of IAEA will highly be appreciated as it can arrange necessary training programmes with inter regional countries, joint R & D activities, Provision of equipments, sharing of expertise with inter regional countries etc. Training programmes in handling of radioactive off gases, radioactive wastes management, quality control of final product, sharing of working experience with different worldwide producers of ⁹⁹Mo</p>																											
Project duration	<p>Indicate a realistic starting date and the number of years required to complete the project. (In the case of projects expected to exceed four years, an assessment will be conducted before the end of the fourth year to decide on the validity of an additional year.)</p> <p>After inter regional collaboration and IAEA support this particular project will be completed within four years once it started.</p>																											
Requirements for participation	<p>Indicate the minimum requirements that counterpart institutions in Member States would need to meet in order to participate in this project, and how the fulfilment of these requirements will be verified.</p> <p>Training workshops, meeting on regular basis, exchange of experience in processing, waste management, safety and quality assurance. Proceeding of these events will be documented and published.</p>																											
Participating Member States	<p>List the Member States expected to participate in this project that meet the requirements established above.</p> <p>Indonesia, Argentina, South Africa, Netherland, Canada, Belgium and all other inter-regional member states</p>																											
Funding and project budget	Provide an estimate of the total project costs and the funding expected from each stakeholder:																											
		<table border="1"> <thead> <tr> <th></th><th>Euro</th><th>Comment</th></tr> </thead> <tbody> <tr> <td>Government cost-sharing</td><td>800000</td><td>Local use</td></tr> <tr> <td>Counterpart institution(s)</td><td>-</td><td>-</td></tr> <tr> <td>Other partners</td><td>-</td><td>-</td></tr> <tr> <td>IAEA Technical Cooperation Fund (TCF):</td><td>400000</td><td></td></tr> <tr> <td> Fellowships / Scientific visits / Training courses / Workshops</td><td></td><td></td></tr> <tr> <td> Experts</td><td></td><td></td></tr> <tr> <td> Equipment</td><td></td><td></td></tr> <tr> <td>TOTAL</td><td>1200000</td><td></td></tr> </tbody> </table>		Euro	Comment	Government cost-sharing	800000	Local use	Counterpart institution(s)	-	-	Other partners	-	-	IAEA Technical Cooperation Fund (TCF):	400000		Fellowships / Scientific visits / Training courses / Workshops			Experts			Equipment			TOTAL	1200000
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