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 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.

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| **Region:** | RCA (Asia) | | |
| **Regional/Cooperative agreement** (if applicable) | | **Priority no. given by regional/cooperative agreement** (for concepts proposed under the auspices of regional cooperative agreements) | |
| **Title** | **Implementation of non-small-cell lung cancer patient screening, prevention and cost effective personalized management through multiplexed genotyping in routine clinical practice** | | |
| **Field of activity** | | | |
| **Regional project category**[1] | √*Transnational*<br>☐ *Regional standard setting*<br>√*Capacity building for developing countries*<br>√*Joint TC activities with a regional or international entity* | | |
| **Names and contact details of project counterparts and counterpart institutions (starting with the main counterpart)** | **Main Counterpart: PAEC**<br>A- *Major Participating Institute*: Nuclear Medicine Oncology and Radiotherapy Institute. G-8/3, Hanna Road, PO Box 1590, Islamabad, Pakistan<br><br>Dr Abida Raza, (Molecular Biologist, Senior Scientist)<br>Tel: 0092-50-9260611-5, Fax; 0092519260616, Email: nori@noripaec.pk<br>Mrs Shahnaz Murtaza, Deputy Chief Scientist<br>Hafsa Aziz, (Biotechnologist, Senior Scientist)<br>Dr Muhammad Fahim, Oncologist, Principle Medical Officer<br>Dr Javed Irfan Ullah, Deputy Chief Medical Officer<br><br>B- *Other Counterpart Institutions:*<br>1. NIBGE National Institute for Biotechnology and Genetic Engineering, Faisalabad<br>2. PIMS Pakistan Institute of Medical Sciences, Islamabad<br>3. AEMC Atomic Energy Medical Centre, Karachi<br>4. BINO Bahawalpur Institute for Nuclear Oncology, Bahawalpur<br>5. CENAR Centre for Nuclear Medicine & Radiotherapy<br>6. GINUM Gujranwala Institute of Nuclear Medicine and Radiotherapy<br>7. INMOL Institute of Nuclear Medicine & Oncology, Lahore<br>8. INOR Institute of Nuclear Medicine Oncology & Radiotherapy, Abbottabad<br>9. IRNUM Institute of Radiotherapy & Nuclear Medicine, Peshawar<br>10. KIRAN Karachi Institute of Radiotherapy & Nuclear Medicine, Karachi<br>11. MINAR Multan Institute of Nuclear Medicine and Radiotherapy, Multan<br>12. NIMRA Nuclear Institute of Medicine & Radiotherapy<br><br>**Other Member states:**<br>Participating member states may include Indonesia, Singapore, Hong Kong, Thailand, Philippines | | |
| **Analysis of regional Gap / Problems/needs** | Employing genotype-based therapy has been highly successful in chronic myelogenous leukemia, gastrointestinal stromal tumors, nonsmall-cell lung cancer (NSCLC) and melanoma, and in many instances, the targeted agent is far more effective than traditional chemotherapy. This shifting paradigm hasdramatically impacted lung cancer treatments. Until recently, therapeutic options for advanced NSCLC were limited to chemotherapies that were 'personalized' only by considering the side-effect profiles of a number of similar modestly effective regimens. Response | | |

[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.

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| | rates were typically 20%–30% and progression-free survival (PFS) was 3–5 months. But now, we know that determining NSCLC genotype can inform the most effective personalized therapies. Patients with mutations in the epidermal growth factor receptor (EGFR) gene benefit from EGFR tyrosine kinase inhibitors (TKIs) with a response rate of >75%, PFS of 9–13 months and improved quality of life compared with chemotherapy. Similarly, patients with EML4-ALK translocations have a 60% response rate, 9-month PFS and a low degree of toxicity when treated with crizotinib, an ALK TKI.<br><br>There is an increasing motivation to develop technologies that can simultaneously determine the mutational status of many genes. That can only be achieved by establishing in vitro molecular application of novel nuclear based multiplexed genotyping methods for effective investigation and management of lung cancer in Member States. |
| **Why should it be a regional project?** | Lung cancer is the most common or second-most common cancer among males in all Asian countries except but for India, Japan, Mongolia, and Taiwan. Mortality has been increased in Asia for the past two decades, with large variation of the incidence and mortality across regions.<br><br>In males, the highest lung cancer incidence rates are in Central/Eastern and Southern Europe (age standardized rate, ASR, of 57 and 49 per 100 000, respectively), North America (ASR of 48.5 per 100 000), and Eastern Asia (ASR of 45 per 100 000). Asian patients have generally younger age of onset. In Asia, more than 30% of patients with lung cancer are never-smokers, and half or more lung cancer in women occur in never-smokers. In addition to different environmental exposures, family history and genetic susceptibility play important roles in the development of lung cancer.<br><br>With the recent advances in research common genetic variants in the treatment of NSCLC is in the era of personalized medicine, with the focus on the development of innovative treatment options, particularly new target based therapies directed against key signaling pathways involved in lung cancer growth and malignant progression. Current project on regional level will provide mutational profile of NSCLC patients in the region subsequently helping in the development of guided therapies. Applying the technology in clinical practice will overall help the region to fight and save our population. |
| **Stakeholder analysis and partnerships** | 1- **Resource providing counterpart**: USA, Australia, UK<br>Resource provider, help in project designing, project execution progress, Expert opinion on submitted results.<br>2- **Resource receiving counterparts**: Pakistan, Singapore, Hong Kong, Indonesia, Thailand, Philippines.<br>Receiving the technical help, project execution, Report writeup and submission to resource provider counter part<br>3- **IAEA:** Financial assistance and overall project organizing agency.<br>4- **PAEC:** Providing basic Laboratory infrastructure to NORI, Islamabad, playing role of central hub for other participating PAEC Cancer Institutes in planning and execution of project.<br>5- **End User:** Any oncologist treating NSCLC patients.<br>6- **Beneficiaries:** NSCLC patients |
| **Overall objective (or developmental objective)** | Implementation of molecular genotyping for personalized treatment and response prediction. |
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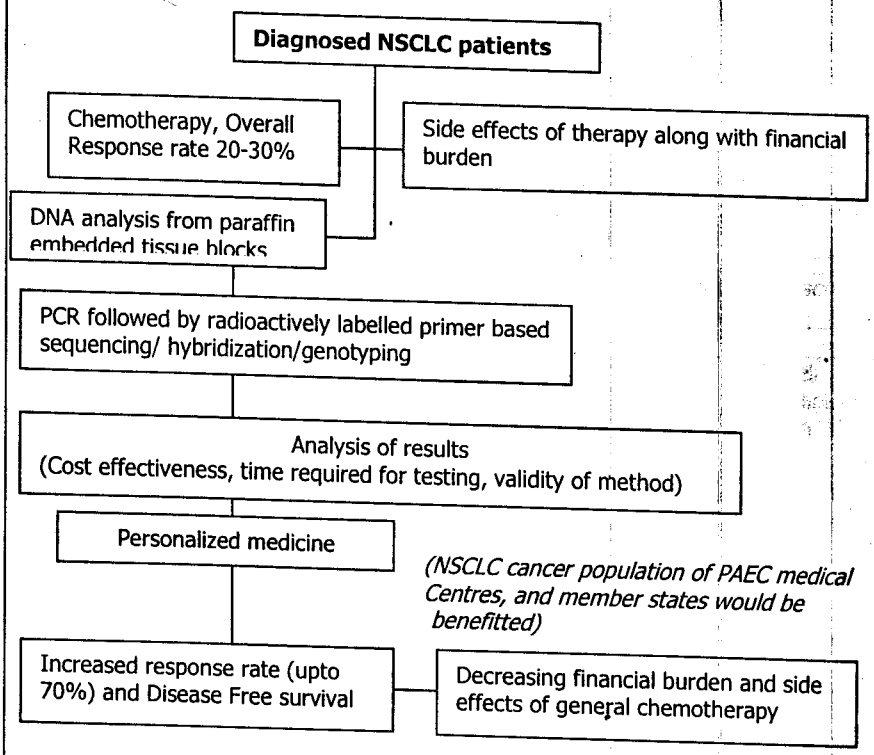
| **Analysis of objectives** |  |
| **Role of nuclear technology and the IAEA** | Techniques used in the project are based on the use of Radioisotope and radioactively labelled primers.<br><br>IAEA will provide financial and technical assistance. |
| **Project duration** | **Start Date:** 01-01-2014<br>1st Year<br>1- Capacity building of Molecular Diagnostics and Research Lab of the Institute<br>2- Human resource development including training of molecular techniques and sequencing by radiolabelling.<br>2nd Year 01-01-2015<br>Screening of NSCLC patients for genetic mutations<br>Implementing the mutational patterns for disease management<br>3rd Year 01-01-2016<br>Awareness of patients and doctors through seminars and symposia<br>4th Year 01-01-2017<br>Final output of the project |
| **Requirements for participation** | Institutes dealing with NSCLC patient treatment. |
| **Participating Member States** | *List the Member States expected to participate in this project that meet the requirements established above. Indicate the role of each Member State in the project.*<br>*Country:* USA, UK, Australia *Role:* √ *Resource (providing expertise)*<br>☐ *Target (receiving expertise)*<br>*Country:* Hong Kong *Role:*<br>☐ *Resource (providing expertise)*<br>√ *Target (receiving expertise)*<br>*Country:* Indonesia *Role:*<br>☐ *Resource (providing expertise)*<br>√ *Target (receiving expertise)* |

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| | *Country:* Singapore *Role:*<br>☐ *Resource (providing expertise)*<br>√ *Target (receiving expertise)*<br>*Country:* Thailand *Role:*<br>☐ *Resource (providing expertise)*<br>√ *Target (receiving expertise)*<br>*Country:* Philippines *Role:*<br>☐ *Resource (providing expertise)*<br>√ *Target (receiving expertise)* |

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| **Funding and project budget** | *Provide an estimate of the total project costs and the funding expected from each stakeholder:* | | | |
| | | | Euro | Comment |
| | *Government cost-sharing* (basic infrastructure, well equipped lab.) | | | (NORI will provide well equipped molecular Biology Lab. Worth more than 100,000 Euro) |
| | *Counterpart institution(s)* | | Nil | |
| | *Other partners* | | Nil | |
| | *IAEA Technical Cooperation Fund (TCF):* | *Fellowships / Scientific visits* | 60,000 | 02 from each member state @ 6000 Euro |
| | | *Training courses/ Workshops* | 50,000 | 01 per member state @ 10,000 Euro |
| | | *Experts* | 30,000 | |
| | | *Equipment* | 10,000 | |
| | | *Consumables* | 30,000 | |
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| | | *TOTAL* | *180,000* | |