Regional Project Document Template

Region			
Regional/Cooperative Agreement (if applicable)	RCA	**Priority No. given by Regional/Cooperative Agreement** (for project proposals submitted by Regional/Cooperative Agreements)	
Project Title	Establishing and Harmonizing academic education and clinical training in Medical Physics towards certification of CQMPs		
Project Duration	4 years (2022-2025)		
Field of Activity	*29 Dosimetry and medical physics*		
Names and contact details of Designated Team Member (DTM) and Counterpart Institutions (*if available*)	Tentatively: Prof Kwan Hoong Ng Department of Biomedical Imaging (Radiology); Faculty of Medicine; University of Malaya Lembah Pantai, KUALA LUMPUR WILAYAH PERSEKUTUAN 50603, MALAYSIA		
Project Summary/Abstract (max 300 words)	A Medical Physicist is a health professional with specialist education and training in the concepts and techniques of applying physics in medicine and competent to practice independently in one or more of the subfields of medical physics. An ideal pathway to become a Clinically Qualified Medical Physicist (CQMP) is to undergo a postgraduate academic program in medical physics followed by structured and supervised clinical training. Once qualified, such professionals should maintain their level of competence through Continuing Professional Development (CPD) programmes. . While the demand for CQMP increases, specific surveys concluded that the availability of CQMP continues to be a major problem in the Asia and Pacific region. To meet this demand, there is a need to harmonize and increase the number of postgraduate programmes, establish certification schemes for CQMPs and develop or enhance CPD programmes in the region. The overall objective of the project is to improve health care to patients in radiation medicine in the region through establishment and harmonization of academic education and clinical training programmes of medical physicists culminating in certification of CQMP. This project also aims to link theaspects of academic education, clinical training and professionalism of Medical Physics in a strategic and sustainable manner. The project will build on the achievements of previous IAEA/RCA projects for ensuring coherence and significant impact. Participating Government Parties (GPs) are also encouraged to take advantage of having a relevant national TC project that would provide a platform to further develop and sustain medical physics locally. The implementation strategy will have to be tailor made to each specific GP situation., It is expected that GPs with established academic and clinical training programmes in medical physics will support the GPs newly embarking in the establishment of these programmes. The project will seek to establish and harmonise the postgraduate medical physics academic programmes ensuring their quality through adherence to international guidelines. The project will foster the link to clinical training programmes to ensure sustainability. The AMPLE platform will continue to support harmonization and expansion of clinical training in all three specialties of Medical Physics (diagnostic radiology, nuclear medicine and radiation oncology). Furthermore, the project will support the establishment and maintenance of CPD programmes in all specialties. References [1] International Atomic Energy Agency. Clinical training of medical physicists specializing in radiation oncology. Vienna: IAEA; 2009.		

	[2] International Atomic Energy Agency. Clinical training of medical physicists specializing in diagnostic radiology. Vienna: IAEA; 2010 . [3] International Atomic Energy Agency. Clinical training of medical physicists specializing in nuclear medicine. Vienna: IAEA; 2011. [4] International Atomic Energy Agency. Postgraduate Medical Physics Academic Programmes. Vienna: IAEA; 2013 [5] International Atomic Energy Agency. Roles and Responsibilities, and Education and Training Requirements for Clinically Qualified Medical Physicists. Vienna: IAEA; 2013. Report No.: Human Health Series No. 25. [6] in draft: Certification IAEA

SECTION 1: PROJECT BACKGROUND AND JUSTIFICATION

Problem to be addressed	This project addresses a regional need, the lack of well-trained clinical medical physicists, which is best supported with regional cooperation. Medical physicists as health professionals are integral to safe and effective radiation medicine applications in nuclear medicine, radiology and radiotherapy. The need for medical physicists in radiation medicine is evident through the IAEA International Basic Safety Standards and the roles and responsibilities of medical physicists are highlighted in Human Health Series No. 25. For academic education and clinical training of medical physicists, the IAEA recommends firstly postgraduate academic education specializing in medical physics and subsequently a structured clinical training residency in a hospital setting. The Regional Cooperative Agreement (RCA) will serve as a form of collaboration and enhancement of national capabilities. It will foster south-south cooperation and the role of the project is to assess and coordinate these efforts to allow an integrated outcome. Thus, a common approach as a regional project makes sense from both the technical and also financial point of view. Cooperation in previous RCA medical physics projects and a non-agreement project are examples of best practice in implementation. In terms of the RCA MTS 2018-2023, this project makes a significant contribution to Strategic Direction 5, and a lesser contribution to Strategic Directions 6 and 7. In terms of Strategic Priorities, it fits well into C.2.2 (a) and (b). The IAEA has supported the establishment of clinical training of medical physicists in the Asian region through several RCA regional projects namely RAS6038, RAS6077 and currently RAS6087. The outcome of these projects has been IAEA publications which set the standard for education and training, piloted structured clinical training programmes established in various countries including Thailand and Philippines, an e-learning resource to support clinical training (AMPLE). Due to shortage of clinically qualified medical physicists in the region, proper linkage between the academic and clinical programmes is needed. Furthermore, there is also no adequate harmonization of medical physics academic education programmes and clinical training. However, the aim to achieve full harmonization would be difficult for some countries in the region due to the diversity of resources, differring educational starting points and national policies. TCS 37, 47 and 50 were developed under the RAS6038 project, however, TCS56 has not been adapted to the regional needs or formally adopted.

	There is a need to increase the number of quality post graduate academic programmes and certified CQMPs as well as to develop CPD programmes in the region. The development of the project document has been supported by results, studies and surveys developed in previous and current projects to establish the baseline as accurately as possible. Some countries may want to adapt the Agency documents to suit national needs in order to accommodate the availability of Faculty or local qualification structures. Medical physics programmes are universally post-graduate (but not necessarily Masters level), e.g. post-graduate diploma.
Why should it be a regional project?	The project addresses a regional need: the lack of clinically qualified medical physicists (CQMPs, with reference to the definition available in the IAEA HHS25 publication) in the three specialty of medical physics and its recognition as health professional (in agreement with ILO definition in the International Standard Classification of Occupations, ISCO 2008). This project originates from several past regional projects (RAS6038, RAS6077, RAS6087 and RAS6088) and builds upon their achievements to strengthen, widen and enhance their impact. To increase the number of CQMPs in the region, the project aims at working on four main pillars: a) increasing the number and quality of postgraduate-level academic programmes in medical physics and their link to clinical training programmes; b) supporting structured and supervised clinical training programmes through AMPLE (established through previous RAS projects) ensuring their sustainability through regional collaborations ; c) supporting the establishment of certification for recognition of clinical medical physicists d) CPD processes to ensure medical physicists will work at the highest standard of competency and receive regular updates on generic developments in technology (specific needs for skills in particular technologies should be covered through fellowships in national projects). For point b) many achievements were reached under previous RAS projects, such as development of guidelines and establishment of an online platform (AMPLE) to regionally support implementation and expansion. AMPLE has allowed GPs in Asia and Pacific to start national clinical training programmes and, in some cases, to develop ad hoc national TC projects to further focus on academic education and clinical training. At the regional level, some academic programmes in medical physics exist, but their harmonization to international guidelines and their link to existing clinical training programmes as per IAEA HHS25 recommendations should be enhanced. At the same time, quality of existing programmes should be ensured and harmonized. It will be a collaborative project, where GPs with expertise will assist GPs seeking to establish academic or clinical training programmes or to enhance them. Harmonization to international standards will be sought, to ensure quality and effective radiation medicine services in the region.
Stakeholders	The principal stakeholders as beneficiaries are expected to be cancer patients and patients receiving radiation medicine diagnosis. This benefit will be transferred to them through the increased skills of medical physicists in these countries in association with the oncologists, radiation therapists, radiologists and nuclear medicine specialists that rely on the medical physicists for understanding of dosimetry, quality assurance and calibration. This would include stimulation of professional societies at national, regional and international level to promote professional and educational standards, changes

	in university programs to better accommodate the academic preparation of medical physicists, etc. <u>Other stakeholders in this project include:</u> (1) International Organization of Medical Physics (IOMP); Asia-Oceania Federation Organizations for Medical Physics (AFOMP); South-East Asia Federation Organizations for Medical Physics (SEAFOMP): ASEAN College of Medical Physics (ACOMP); (2) National health institutes, including national health organizations; ministries; and authorities of each participating Member State. (3) National nuclear agencies, including nuclear agencies or nuclear regulatory bodies of each participating Member State. (4) Universities and training centres, which are directly involved in the education and clinical training in this project. (5) Private healthcare sectors which are involved in providing the facilities and supervision for clinical training. (6) Patients as the end users and ultimate beneficiaries of this project. (7) Under RCA project mechanisms, each participating GP will form a National Team to facilitate implementation of related national activities and set the foundation for sustainability. These National Teams will form the core for the development of national partnerships as well as the long term sustainability of the project output and outcomes. (8) Potential partners and/or donors that can be identified throughout the design phase of the project.
Partnerships	These are the strategic partners who could materialize the implementation of a systematic and structured education and training programme of medical physics at the national level. Contributions of the respective partners are as follows: (1) universities to provide accredited and quality postgraduate education for the qualification and certification of medical physicists. (2) medical physics societies to endorse and support the implementation of regional clinical training centres in medical physics; (3) national certification bodies to implement the certification of qualified medical physicists in accordance with internationally accepted standards; (4) accreditation body for accrediting the postgraduate courses in the Asia and the Pacific region (5) south-south partnerships: developing countries, such a Malaysia, Thailand, Indonesia, Singapore and Pakistan are already acting as resource countries in medical physics education and training. (6) partnerships should be possible with Universities offering MSc courses in the region and large teaching hospitals that run clinical training programs. Such agreements would form the foundation for a critical number of regional resource units (RRU). While the formation of such RRUs is outside of the scope of the current project, there are a number of candidate sites such as the medical physics laboratories/hospitals of the department of atomic energy, India, Chulalongkorn University hospital, Thailand, University of Sainto Tomas, Philippines, the University of Malaya etc.
Nuclear technique(s) to be used in addressing the problem, or nuclear/radiation safety actions. Role of IAEA.	Radiation medicine for the diagnosis and treatment of disease is well established, and while non-radiation techniques are available for some aspects of this work, radiation medicine is seen as a significant component in modern medicine for countries of all economic development. Medical physics is an essential requirement for the safe and effective utilisation of nuclear technology in the health care sector. Radiation Protection in Medicine (Milestone 3) is one of the five Milestone requirements to meet the IAEA Basic Safety Standard 115. A core function of the IAEA is in improving the radiation protection infrastructure in participating Member States as recently outlined in the 'new' Basic Safety Standards (2014) to enable them to comply with international standards.

	The IAEA's role will be in provision of project funding, implementation of project activities and technical and secretarial support, such as liaising with LCC and National Project Counterparts, ensuring expert technical review, etc. As might be expected in a regional project, the coordination of the IAEA will allow the maintenance of standards in clinical practice and radiation safety throughout the participating GPs.

SECTION 2: PROJECT DESCRIPTION

Overall Objective (or Developmental Objective)	To improve health care to patients in radiation medicine in the region through establishment and harmonization of academic and clinical training programmes of medical physics in accordance with IAEA guidelines.
Outcome (Project Specific Objective)	Improved Availability of Clinically Qualified Medical Physicists (CQMP) in the region
Project Logical Framework Matrix (LFM)	*See below the the full Logical Framework Matrix.*
Physical Infrastructure and Human Resources	Many participating GPs have develop infrastructure and human resources in medical physics as a result of their involvement in earlier regional and national projects. However GPs are currently in different phases with respect to the availability of facilities,equipment and qualified human resources to . GPs in more advanced phases will provide would provide an additional boost in terms of physical infrastructure and human resources for the implementation of the project. National laboratories, academic institutions and clinical training centres will also provide support and extend their resources through involvement as the national project team members. Regional collaborating centres for medical physics will play a major role in the provision of medical physics training facility and human resources support in the implementation of the project. GPs will contribute with their expertise, experience in radiation medicine and offering support through their national medical physics academic education and clinical training programmes for the benefit of regional activities.
Sustainability	Sustainability is linked to a continuous and detailed risk management. An important aspect of this project through its development and its planned implementation, should be a focus on replicating the activities at the GPs national level. Experience from previous projects, such as RAS6038, indicates that clinical training is largely inherently sustainable once it has been successfully introduced to a GP. However, some key elements in clinical training have emerged that require special attention, and these are in the areas of supervision and assessment. Maintaining the e-platform at a sufficient standard, utilising electronic supervision and the use of suitable survey instruments in assessing standards for clinical training facilities will all play a role in the sustainability of the project and into the future. Piloting of clinical training has shown that some GPs in the region have been able to largely sustain clinical training with only very limited assistance from the IAEA.

SECTION 3: IMPLEMENTATION ASPECTS

Implementation Strategy	The project will build on the achievements of previous IAEA/RCA projects and for ensuring coherence and significant impact it will be closely coordinated with the related activities of related national institutes. Each participating GP would be required to identify and nominate a National Project Coordinator (NPC) who would be the focal person during the project implementation. The implementation strategy will have to be tailor made to the specific situation per country and also, it is expected that GPs with established education and training programmes in MP support newly embarking GPs in the establishment of these programmes. The project will seek to establish and harmonise the postgraduate medical physics educational programmes ensuring their quality through adherence to

	international guidelines. The project will foster the link to clinical training programmes to ensure sustainability. The AMPLE platform will continue to support harmonization and expansion of clinical training in all three specialties of Medical Physics (diagnostic radiology, nuclear medicine and radiation oncology). Furthermore, the project will support the establishment and maintenance of CPD programmes in all specialties through the RTCs. Each participating GP would be required to identify and nominate a National Project Coordinator (NPC) who would be the focal person during the project implementation. The NPC would also be expected to be well versed in all related subjects as well as project implementation methodologies advised and appraised by the IAEA. All participating GP would be required to form at an appropriate time the National Project Team (NPT) in consultation with the NPC. The members of the NPT would be appropriately selected so as to execute and propagate objectives of the project. The deliverable and sustainability will directly be attributed to the composition of the NPC/NPT and the executive responsibilities of monitoring agencies in the GPs. The implementing institutions in the GPs would provide all the necessary logistics, human resources and financial support for execution of the project activities at the national level. All the stakeholders like NPC, NPT members, GPs and members of the monitoring team at GP level would be collectively responsible in their duties towards successful implementation of the project.
Monitoring and Reporting	Reporting and monitoring will be achieved through the PPAR system. In addition to this it is expected that the e-platform will also provide electronic report of needed parameters to reflect the progress of clinical training within a GP. Reports will also be provided by the regional clinical coordinator who has oversight of the progress of the training programs.

Logical Framework Matrix (LFM)

	Design Element	Indicator	Means of Verification	Assumptions
Outcome	Clinically trained Medical Physicists availability improved in the region	1. Number of CQMP 2. Number of graduates 3. Number of postgraduates programmes 4. Number of clinical training programmes	Country reports	Commitments by participating GPs in achieving this common objective
Outputs	1. Project management team operational.			
	2. Postgraduate and other medical physics educational programmes quality harmonised and adhered to international guidelines.	Number of nationally accredited medical physics education programmes in the region.	Countries reports	Availability of faculties Cooperation with the clinical Training programme coordinators
	3. Clinical training supported and strengthened through AMPLE in all specialties in accordance with TCS37, 47, 50	Number of graduates and programmes	Country reports AMPLE reports Expert Mission's audit reports	CPs use AMPLE
	4. Certification mechanisms for CQMP established	Number of mechanisms initiated	Country reports Surveys	Cooperation of the National Health authorities
	5. CPD mechanisms for CQMP established	Number of national CPD programmes established Number of RTCs implemented	Country reports Surveys Reports of the RTCs and IAEA e-learning participation	Cooperation of the professional societies Availability of appropriate expertise and host