

Deploying technology and management of sustainable uranium extraction projects (INT2019)

THE CHALLENGE

Sustainable uranium production is critical for uranium fuel security. This is particularly the case in nuclear newcomer countries, some of which are looking to source fuel from their own uranium resources.

A 2014 consultancy meeting on the subject of uranium production from phosphates reviewed Member States' activities related to sustainable uranium extraction from unconventional resources. Rather than technical or scientific obstacles, it identified issues in design, management and project execution skills and competencies that were holding back the progress of critical projects or causing avoidable, costly project failures.

IAEA RESPONSE

This project seeks to address the identified gaps and deficiencies in a systemic way. It will assist Member States in assuring the supply of uranium for nuclear power plants in the most sustainable, integrated, economically viable manner possible, within the context of safe, socially accepted good practices. It will also help enhance the mineral value chain and build business models that can be adapted to a wide range of local conditions.



PROJECT ACTIVITIES

- **Assess feasibility.** Focus will be on technology options, environmental impact and the socioeconomic benefits of mining low-grade uranium ores.
- **Assess, classify and report** unconventional uranium resources.
- **Social and environmental impacts.** Optimize the returns from smart management and disposal of wastes and residues.
- **Feasibility studies.** These will be developed, scoped and executed in respect of uranium and related critical materials projects.
- **Assess policy framework.** Focus will also be on the associated body of laws and regulatory codes for naturally occurring radioactive material in energetic industries.
- **Techniques for efficiently surveying and defining a socio-environmental baseline in uranium mining projects.** These will be based on key milestones in the projects' life cycles.

DURATION

Four years

BENEFICIARY COUNTRIES

Various Member States from different TC regions



EXPECTED RESULTS

The project is expected to improve uranium production planning and implementation in a framework of social acceptance. In particular, it will enhance the assessment and evaluation of uranium production from low-grade uranium ores and uranium extraction from unconventional sources. It will also strengthen linkages between uranium, coal and oil and gas production and enhance stakeholder partnerships and social licensing.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	128 400
2017	149 800
2018	112 350
2019	149 800
Total	540 350

This project is co-funded from TCF with an amount of EUR 1 220 000

Contributing to the evidence base to improve stunting reduction programmes (INT6058)

THE CHALLENGE

Around the world, stunting affects at least 165 million children under the age of five. Ninety per cent of all cases occur in 34 Member States in Asia, Latin America and sub-Saharan Africa.

Under the Scaling Up Nutrition movement, many low- and middle-income countries have adopted national policies to promote nutrition and reduce stunting in young children. However, evaluating the effectiveness of these programmes is often given marginal importance or is limited to the monitoring of programme implementation. In resource-limited settings, however, an evidence base is essential for policymakers to select the most efficient interventions to reduce stunting.

IAEA RESPONSE

In its efforts to promote nutrition for better health, the IAEA helps establish partnerships between policymakers and scientists to track the progress and effectiveness of programmes and thereby inform evidence-based decisions.

This project will use stable isotope techniques to assess the effect of specific programmes aimed at reducing stunting in children younger than five. It will focus on improved nutrient absorption resulting from reduced environmental enteropathy, higher adherence to recommended breastfeeding practices and optimal quality of growth. This will help inform policy makers of the most efficient programmes to implement, improve or combine with existing ones.



PROJECT ACTIVITIES

- **Training and support.** Training will be conducted on the use of specific breath tests that assess the integrity and function of the small intestine. It will focus on data and breath sample collection and the analysis of breath samples. Training will also be given in saliva sample collection and testing.
- **Data management.** To strengthen data analysis and interpretation.
- **Analyse and interpret study results.** Data from different countries and interventions will be pooled and analysed.
- **National workshops on study results.** To be organized in participating countries.
- **Training** and/or refresher courses for personnel.
- **Reports.** These will detail the effect of pre-specified interventions on nutrient absorption, feeding and breastfeeding practices and body composition, and their association with reduced stunting in children under the age of five.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia, Latin America and sub-Saharan Africa



EXPECTED RESULTS

This project will produce evidence to inform policy makers of the most efficient interventions for the reduction of stunting in children under five years of age. Ultimately, it will help move towards achieving the World Health Organization goals for a 40% reduction in the number of stunted children under five years by 2025.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	224 700
2017	321 000
2018	149 800
2019	21 400
Total	716 900

This project is co-funded from TCF with an amount of EUR 1 082 000

Supporting Member States to increase access to affordable, equitable, effective and sustainable radiation medicine services within a comprehensive cancer control system (INT6059)

THE CHALLENGE

Cancer incidence is increasing. Estimates by the International Agency for Research on Cancer indicate that by 2030 more than 21 million people will be diagnosed with cancer and 13 million will die from the disease each year. In low- and middle-income countries, existing radiation medicine infrastructure and available resources can meet only a small portion of increasing needs. At least 84 Member States are inadequately equipped with radiotherapy technology, with less than 50% of radiotherapy patients having access to treatment. Twenty-six Member States have no operational radiotherapy services at all.

Improved cancer survival rates depend not only on expanding radiotherapy capacity but also on heightened cancer awareness and information. Recognizing that more than 30% of cancers can be prevented and 30% cured if diagnosed early and treated adequately, the World Health Organization promotes the establishment of National Cancer Control Programmes/Plans encompassing elements of prevention, early detection, diagnosis and treatment, and palliative care.

IAEA RESPONSE

The IAEA's Programme of Action for Cancer Therapy aims to leverage the effectiveness of radiation medicine in low- and middle-income countries by promoting its integration into comprehensive national cancer control programmes.

This project consists of activities related to advocacy for the role of radiation medicine in cancer control amongst health policymakers, as well as capacity building through training. In parallel, the project will support Member States in comprehensively assessing their cancer control situation through expert missions in order to identify the gaps and needs for the successful integration of radiation medicine into their national cancer control programmes.

PROJECT ACTIVITIES

- **Policy framework.** Support will focus on the provision of results-based programmatic responses to Member States' priorities in cancer control through policy dialogue, coordination of strategic partnerships and resource mobilization.
- **Resource mobilization.** Efforts will be driven through targeted communication, advocacy and outreach events, materials, tools and products.
- **Comprehensive assessments of national cancer control capacities.** Recommendations will address identified needs and follow-up activities.
- **Integrated multi-stakeholder projects.** To be developed, evaluated and implemented in selected Member States.
- **Advocacy and implementation tools.** These will be developed to promote access to affordable and sustainable cancer care, including radiotherapy.
- **Capacity building and training tools.** To support cancer control in Member States

DURATION

Four years

BENEFICIARY COUNTRIES

Various Member States from different TC regions



EXPECTED RESULTS

The project is expected to increase access to affordable, equitable, effective and sustainable radiation medicine services within a comprehensive cancer control system.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	5 296 500
2017	4 552 850
2018	4 103 450
2019	4 028 550
Total	17 981 350

This project received extrabudgetary contributions in the amount of EUR 336 803

Overcoming the barriers to implementation of decommissioning and environmental remediation projects (INT9183)

THE CHALLENGE

Activities associated with the early development of nuclear energy have resulted in numerous legacy situations involving facilities and sites where action is needed to deal with radioactive contamination which otherwise may pose a risk to human health or environmental safety. There are also significant legacies from non-nuclear industries, for example from the extraction of oil and gas, involving accumulations of naturally occurring radioactive material. Facilities requiring decommissioning include nuclear reactors and associated fuel cycle and research facilities, as well as those used for the temporary storage of radioactive waste.

Extensive decommissioning and environmental remediation programmes have been implemented in many Member States. But while some countries have achieved substantial progress, many others are facing significant difficulties in implementing their programmes.

IAEA RESPONSE

The IAEA has established a number of initiatives aimed at developing a better understanding of the issues that constrain progress, particularly in relation to the cleanup of legacy sites. This project aims to promote greater progress in implementing decommissioning and environmental remediation programmes. It will share knowledge and experience with the aim of developing increased levels of competence and understanding of good practice in view of the wide range of technologies used, such as equipment for the radiochemical and radiometric determination of radionuclides.



PROJECT ACTIVITIES

- **Training.** This will focus on specific topics important for the implementation of decommissioning and environmental remediation.
- **Facilitate sharing of experiences between** advanced programmes, as well as demonstrations of best practices in decommissioning and environmental remediation.
- **Exchange knowledge and experiences** in the implementation of decommissioning and environmental remediation.

DURATION

Four years

BENEFICIARY COUNTRIES

Various Member States from different TC regions



EXPECTED RESULTS

The project is expected to strengthen Member States' frameworks for the implementation of decommissioning and environmental remediation programmes. This includes the legal and regulatory framework, funding schemes, waste management infrastructure, access to relevant technology and arrangements for public involvement in decision-making.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	561 750
2017	219 350
2018	294 250
2019	315 650
Total	1 391 000

Some activities under this project have been funded from TCF with an amount of EUR 349 999

Developing, expanding and reinforcing energy planning capabilities, including nuclear power (RAF2010)

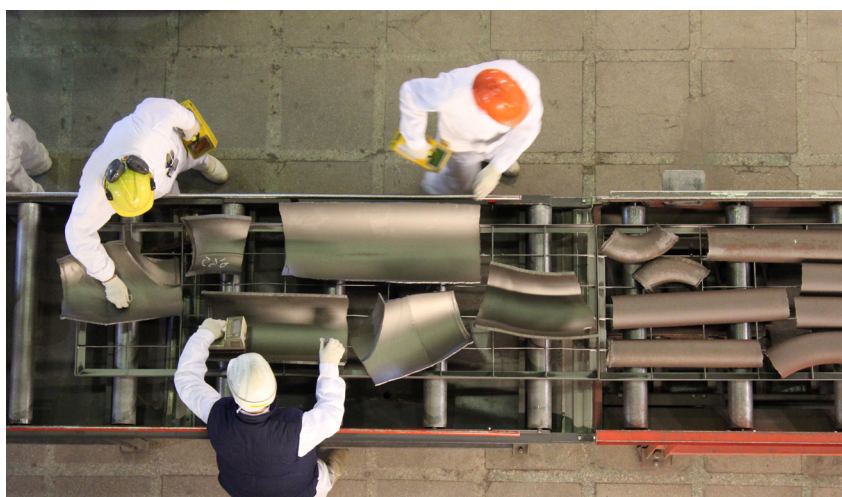
THE CHALLENGE

Many African countries do not have sufficient natural energy resources to respond to steadily increasing energy demands. While some countries have established interconnected electricity grids within sub-regions to improve their supply through resource pooling, energy needs are on the rise. A number of African countries are interested in introducing nuclear power as part of their energy mix to sustain their emerging economies.

IAEA RESPONSE

The aim of the project is to assist participating Member States in building and strengthening regional and national capacities to assess viable and competitive energy options, based on reliable data. Using the IAEA's energy planning approach and tools, it will help countries develop national energy plans and support national planning activities, taking due account of the prevailing regional and sub-regional energy supply conditions.

The project will also explore the feasibility of introducing nuclear power, with due regard to nuclear safety frameworks and a common understanding of the major issues involved. It will focus on the promotion of networking, partnerships and resource sharing among regional energy commissions and other regional and sub-regional cooperatives.



PROJECT ACTIVITIES

Expert missions, training and workshops. These aim to build capacity in developing national, regional and sub-regional energy supply models. Member States will focus on using the IAEA's energy planning tools, collecting data, preparing energy statistics and energy balances, and raising awareness of the implications of introducing nuclear power.

DURATION

Five years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

As a result of this project, participating Member States will have a better understanding of the options available to address their electricity needs, as well as better energy planning capabilities.

From the collected data and the regional and sub-regional energy strategies that will be developed within the framework of the project, policy makers will be able to make informed and sustainable decisions. The regional strategy on energy supply will be used as a basis for developing a regional energy pool. The assessments will also assist Member States in determining national positions with regard to the introduction or expansion of nuclear power development.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	219 350
2015	420 510
2016	321 535
2017	58 850
2018	107 000
Total	1 127 245

The project is co-funded from TCF with an amount of EUR 404 600 and received extrabudgetary contributions of EUR 461 604.

Strengthening Africa's regional capacity for diagnosis of emerging or re-emerging zoonotic diseases, including Ebola Virus Disease (EVD), and establishing early warning systems (RAF5073)

THE CHALLENGE

The Ebola Virus Disease (EVD) outbreaks, unprecedented in size and spread since its discovery in 1976, seriously impacted livelihoods of people and economies of the affected countries. Experts predict that outbreaks of 'emerging' zoonotic diseases could be more diverse and more severe in the future. The number of cases of animal diseases which can be transmitted to humans (zoonoses) has been on the rise over the past years. Many zoonoses are re-emerging in previously non-endemic areas, which is another indicator for the general spread of endemic zoonosis. It is therefore crucial for all countries at risk to be prepared to detect emerging zoonotic diseases as early as possible and undertake appropriate response actions.

IAEA RESPONSE

The project supports capacity building for the early diagnosis of emerging zoonotic diseases under adequate biosafety conditions, provides the equipment needed to perform diagnostic assays under safe conditions, and strengthens national and regional mechanisms for disease prevention and control. Furthermore, training is provided on biosecurity and for safely carrying out tests for the early diagnosis of zoonotic diseases. This will help participating countries prevent or mitigate future zoonotic disease outbreaks, by enabling earlier detection, faster responses and containment



PROJECT ACTIVITIES

- Provision of biocontainment tents, RT-PCR equipment, reagents and consumables.
- Training of national teams on high bio-safety working conditions and validation of this capacity by a Reference Laboratory.
- Training of teams to perform EVD diagnostic in the field, under high bio-safety working conditions.
- Strengthening of networks among diagnostic national teams; exchange of information and experience.
- Development of simple-to-use educational material on bio-safety working conditions for EVD diagnosis.

DURATION

Five years

BENEFICIARY COUNTRIES

Cote d'Ivoire, Guinea, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, South Africa and Uganda, but could be extended to more countries depending on needs and availability of funding



EXPECTED RESULTS

Improved regional capabilities to respond to emerging zoonotic diseases, including EVD, by performing high-quality diagnosis using RT-PCR under high bio-safety conditions. Enhanced control of emerging zoonotic diseases, through safe and accurate early detection of pathogens in wildlife and livestock, and the establishment and synchronization of one health platform in African countries (veterinary and medical authorities working together).

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Footnote a/Budget (EUR) with 7% PSC included

Total: 3 768 900

Enhancing capacity for the detection, surveillance and suppression of exotic and established fruit fly species through the sterile insect technique in combination with other suppression methods (RAF5074)

THE CHALLENGE

A variety of different fruit fly species are destroying the fruit and vegetable harvests of farmers in Africa. This is adversely affecting their livelihoods and causing significant economic losses to the Member States concerned. Farmers have tried to control the pests using enormous amounts of insecticides, but with limited success. In addition, insecticides are not only costly for the farmers but they also kill useful insects and are hazardous to the environment.

IAEA RESPONSE

The sterile insect technique uses ionizing radiation to sterilize the males of fruit fly species, so that the females do not bear offspring. The technique does not adversely affect useful insects, the environment or the health of people.

This project aims to provide technical guidance and capacity building based on current experience and local knowledge of surveillance, detection and suppression of fruit flies and to select the most appropriate strategies for the conditions in each participating Member State.



PROJECT ACTIVITIES

- **Training.** This will focus on the development of common monitoring protocols and the deployment of monitoring systems to detect exotic fruit fly pests. It will also cover quarantine and pest risk analysis, fruit fly identification and the implementation of fruit fly suppression.
- **Technical capabilities and infrastructures.** Participating counterpart institutions will be strengthened in maintaining fruit fly quarantines.
- **Sterile Insect Technique.** Academic and practical training programmes on this technique will be developed.
- **Awareness.** Activities will focus on raising awareness and facilitating exchanges between the sterile insect technique community, stakeholders and end users in selected areas, as well as the international community.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

Participating Member States will acquire the necessary technical capacities and competencies to detect, identify, monitor and suppress different varieties of fruit fly pests through the use of the sterile insect technique combined with other suppression methods. Additionally, knowledge of the movement of exotic fruit fly pests will help countries to take necessary precautions to prevent accidental entries.

The suppression of targeted pests will lead to improved quality and quantity of fruits and vegetables, thus increasing markets and boosting the livelihoods of farmers. This will contribute to the country's food security and an increased gross national product.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	105 074
2017	57 780
2018	74 900
2019	53 500
Total	291 254

This project is co-funded from TCF with an amount of EUR: 1 133 600

Supporting area-wide tsetse and trypanosomosis management to improve livestock productivity, phase III (RAF5077)

THE CHALLENGE

Altogether some 32 tsetse fly species and sub-species infest an area of 8.1 million square kilometers in sub-Saharan Africa. The flies are the cyclical vectors of trypanosomosis, a disease occurring mostly in rural areas. In humans the disease is called human African trypanosomosis or 'sleeping sickness', and in livestock it is referred to as African animal trypanosomosis or 'nagana'. Sleeping sickness is a potential threat to some 60 million people living in infected areas, while nagana is devastating to livestock, putting 45-50 million animals at risk.

As a result of the disease, most of the animals are crowded into the few tsetse-free areas, exacerbating erosion and environmental degradation. The majority of people in Africa live in rural areas and rely on agriculture for their livelihood, and the tsetse problem is preventing the establishment and sustenance of productive agriculture and livestock systems.

IAEA RESPONSE

The project aims to enhance capacity in African Member States for assessing the feasibility of an area-wide integrated pest management campaign against the tsetse problem. It will help countries to address some of the identified points that may affect the future integration of the sterile insect technique with other control tactics, for example the lack of a guaranteed and economic supply of sterile pupae or male flies at the regional level, and the identification of isolated pocket populations on the fringes of the tsetse belt distribution that can be targeted for sustainable eradication.



PROJECT ACTIVITIES

- **Databases.** Assist in establishing databases for recording, processing and analyzing tsetse colony performance.
- **Increase production capacity of tsetse sterile males.** This will ensure the supply to ongoing and potential tsetse and trypanosomosis programmes with a sterile insect technique component.
- **Review and standardize quality control and quality assurance procedures.** These will focus on the handling and release of sterile male flies, data processing and reporting methodologies and systems.

DURATION

Two years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

The project will result in an enhanced capacity to assess the feasibility of an area-wide integrated pest management campaign, with a sterile insect technique component, against the tsetse problem. This will eventually contribute to the development of sustainable agriculture, in particular the development of improved livestock production systems, rural development and, ultimately, to food security.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	353 100
2019	353 100
Total	706 200

This project is co-funded from TCF with an amount of EUR 655 700

Integrated and sustainable management of shared aquifer systems and basins of the Sahel region (RAF7011)

THE CHALLENGE

The Sahel region stretches across the north of the African continent between the Atlantic Ocean and the Red Sea. Within it, most available fresh water is located in underground aquifers. But information on the aquifer geometry, groundwater availability and renewability is still inadequate. This greatly affects sound decision making regarding the sustainable development and management of this scarce resource.

At the same time, the number of wells and irrigation systems in various aquifers of this region has increased in recent years, with no or inadequate regulation. This has resulted in overexploitation of groundwater resources and the deterioration of groundwater quality. High nitrate and arsenic levels, as well as salinization, are among the key water quality challenges. These are set against a backdrop of climate change and variability, which is already having an impact on groundwater recharge and demand for groundwater abstraction.

IAEA RESPONSE

Providing adequate information on the hydrological cycle of aquifers is pivotal to the design and implementation of strategies for national exploitation and management of these resources, and to enhance the safety of dams and artificial reservoirs. This project aims to enable and promote the integrated management and sustainable development of shared groundwater resources in the Sahel. It will use isotope hydrology techniques complemented by conventional techniques to generate reliable data for the characterization of aquifers.



PROJECT ACTIVITIES

- **Project planning** and review meetings.
- **Regional training courses**, technical meetings and expert missions.
- **Procurement of equipment** to improve regional capabilities for analytical services.
- **Data collection**, compilation and analysis.
- **Regional database management**.

DURATION

Four years

First year of approval 2012

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

This project is expected to address and fill key methodological, data and knowledge gaps in the shared aquifer systems of the Sahel region. It will enhance capacity for the application of conventional and isotopic techniques on shared groundwater resources. In addition, the project will provide a scientific basis for the preparation of a strategic action programme to establish a legal policy and institutional framework for multi-partite management and rational use of shared aquifers.

TOTAL ESTIMATED BUDGET

Initial estimated required Budget

Year	Footnote a/Budget (EUR) with 7% PSC included
2012	273 940
2013	2 765 600
2014	2 405 448
2015	406 078
2016	322 284
Total	6 173 350

Some activities were implemented from TCF with an amount of EUR 540 000 and from extrabudgetary contributions in the amount of EUR 1 427 015.

Applying nuclear analytical techniques to support harmful algal bloom management in the context of climate and environmental change, phase II (RAF7014)

THE CHALLENGE

Pollution, rising temperatures and ocean acidification are threatening the health of African marine and coastal ecosystems. The cumulative impact of these stressors includes a decline in local biodiversity and increased amounts of algae, bacteria and harmful algal blooms, which adversely affect food quality, safety and security.

Reliable information on ocean acidification is vital for predicting the effects of environmental changes on marine ecosystems and for finding viable options for the adaptation and mitigation of emerging issues.

IAEA RESPONSE

Nuclear techniques offer reliable, swift and cost-effective tools for detecting toxins produced by harmful algal blooms in marine foods. This project's goal is to build and strengthen the technical and human resource capacities in participating Member States for the application of nuclear techniques in monitoring and assessing the impact of global change (i.e. pollution, increasing seawater temperature and ocean acidification) on harmful algal blooms, to measure ocean acidification, and to evaluate the potential biological and socio-economic impacts and implications.



PROJECT ACTIVITIES

- **Scientific information and materials.** Harmonized, updated, translated field and laboratory manuals, guides, protocols and data analysis techniques will be distributed.
- **Receptor Binding Assay.** Training will be given on this technology. Relevant equipment and reagent needed for the method will be acquired.
- **Collection and analysis.** Environmental samples and/or commercialized seafood will be collected for toxin analysis. Data on toxin identity and quantities will be generated. Personnel training will be advanced on the collection, identification and culture of toxin producing microalgae.
- **Harmful algal bloom monitoring programmes.** These will be established or strengthened.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

The results of the data collected will be compiled and a regional integrated seafood safety network will be put into place in Member States. Based on the research findings, a communication strategy will be developed to enhance regional collaboration and ensure that the findings reach a wider audience, including policymakers and marine resource managers. The research findings will feed policies that are targeted to enhance seafood safety, environmental health and to prepare for emerging issues.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	49 434

This project is co-funded from TCF with an amount of EUR: 1 138 200 covering the years 2017-2019

Strengthening technical capabilities for patient and occupational radiation protection in Member States (RAF9053)

THE CHALLENGE

Medical radiation accidents and overexposure are leading to injuries and sometimes death in patients, as well as eye lens injuries to staff. Patient dosimetry is absent in some Member States, while many of the radiation workers using high doses of ionizing radiation do not have adequate training in radiation protection. At the same time, in some countries up to half of the radiological examinations are unjustified, making it essential to introduce actions on the justification of medical exposure. New requirements in the revised Basic Safety Standards have reinforced the need for action within end-user facilities.

IAEA RESPONSE

The project aims to address the growing difficulties in medical and industrial radiation protection in Africa. This will be achieved through established radiation protection programmes, in line with new international basic safety standards, as well as through strengthened radiation protection monitoring programmes and good radiation protection practice.



PROJECT ACTIVITIES

- **Training.** This will focus on external and internal dosimetry techniques, occupational radiation protection in industrial radiography sites, workplace monitoring, optimization of occupational radiation protection programmes, radiation monitoring and control issues in industries handling naturally occurring radioactive materials.
- **Build capacity** in the implementation of quality management systems in technical services.
- **Assist** the establishment of a national dose registry.
- **Advise** on conformity with IAEA standards.
- **Support** the implementation of optimization of patient protection.
- **Support** the establishment and implementation of procedures for reporting incidents by counterparts.

DURATION

Two years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

The project is expected to result in established radiation protection programmes in medical and industrial practices, in line with the requirements of new international basic safety standards. Ultimately, it will lead to improved patient safety, as well as the safety of radiation workers.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	242 890
2015	209 506
Total	452 396

This project is co-funded from TCF with an amount of EUR 265 000 and have received extrabudgetary contributions in the amount of EUR 332 494

Strengthening and harmonizing national capacities to respond to radiation emergencies (RAF9055)

THE CHALLENGE

A number of emergencies have occurred resulting in radiation injuries to exposed individuals and/or the contamination of large areas of land, affecting the living conditions of communities. It is important, therefore, that effective, integrated and harmonized emergency preparedness and response mechanisms are in place to protect people and the environment from ionizing radiation.

Many countries in Africa have made significant progress in establishing national radiation emergency plans and interim response capabilities following their participating in earlier technical cooperation projects. However, further progress is needed towards strengthening national capacities and harmonizing regional response mechanisms.

IAEA RESPONSE

This project aims to assist in building emergency preparedness and response in countries with weaker capacities and infrastructure, and to strengthen capacities in those countries in which the infrastructure is more advanced. Above all, the project will establish effective networks in the region and facilitate mutual learning to harmonize response mechanisms between countries in line with international safety standards.



PROJECT ACTIVITIES

- **Training of response personnel.**
- **Focused drills and exercises.**
- **Peer reviews.** These will be conducted through Emergency Preparedness Review missions, to prioritize further improvements in national capabilities.
- **Self-assessment tests.** Member States will self-assess their level of emergency preparedness and response capacities.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

The project is expected to strengthen and harmonize national response mechanisms for radiological and nuclear emergencies at the regional level. It will also enable effective response to radiation emergencies and better protect people and the environment from ionizing radiation.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	67 410
2017	136 960
2018	130 540
2019	114 490
Total	449 400

This project is co-funded from TCF with an amount of EUR 1 070 000

Strengthening education and training in radiation safety and sustaining human resources development and nuclear knowledge management (RAF9056)

THE CHALLENGE

It is the vision of the African Regional Cooperative Agreement for Research, Development and Training Related to Nuclear Science and Technology (AFRA) that by the end of 2018, each of its Member States will have the possibility to educate and train its citizens in a variety of fields in nuclear science and technology. In this way, it is hoped to meet the needs and bridge the gap in human resource development in the nuclear field in Africa. Education and training include areas such as radiation therapy, nuclear medicine, nuclear engineering, radiation protection, nuclear safety and security, the sterile insect technique and water resources management.

IAEA RESPONSE

With a view to supporting the building of national and regional capacities in nuclear science and technology, the project's main objective is to establish AFRA's Network on Education and Training in Nuclear Science and Technology (AFRA-NEST) and to develop e-learning materials. It will target the staff of national regulatory authorities, radiation protection officers and experts.



PROJECT ACTIVITIES

- **Establish agreements** with regional and interregional networks.
- **Education and training of personnel.** This will include post graduate education courses in radiation protection, training portal administrators, training the trainers on how to give courses over the internet, as well as sharing relevant e-learning materials, data and information.
- **National strategies.** This includes teaching IAEA methodology for developing a national strategy in radiation safety, and exchanging experiences and providing advice on how to build sustainable competence through a national strategy.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

Participating Member States will strengthen their ability to identify and build the human resource capacities needed for achieving national and regional development objectives in nuclear science and technology, including radiation safety. Enhanced human resource capacities, improved networks, and the institutes and education programmes established through the project will also contribute to the self-reliance and self-sustainability of participating countries and the region as a whole.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	138 672
2018	138 672
2019	470 586
Total	747 930

This project is co-funded from TCF with an amount of EUR1 323 400 and received extrabudgetary contributions in the amount of EUR 76 992. The year 2017 is fully funded from TCF.

Improving the regulatory framework for the control of radiation sources in Member States (RAF9058)

THE CHALLENGE

Radiation and nuclear related technologies are employed in several areas in African Member States, for example in health, mining, research and education. However, approximately 40 percent of African Member States have no regulatory framework in place for the control of radiation sources, while some 50 percent of Member States in the region need to strengthen their existing regulatory frameworks. Support is needed to ensure the safe use of radiation sources in order for the workers, the public and the environment to be protected from the harmful effects of ionizing radiation.

IAEA RESPONSE

This project is intended to ensure the protection of occupationally exposed workers by supporting participating Member States without regulatory frameworks to build capabilities and develop radiation safety laws and regulations in line with international safety standards. For Member States with regulatory frameworks already in place, the project will provide support to enhance their systems and strengthen the activities of regulatory bodies.



PROJECT ACTIVITIES

- **Expert advice, meetings and training.** These will focus on radiation safety, including the implementation of regulatory functions such as authorization, inspection and enforcement, in line with IAEA safety standards.
- **Draft and review regulations.** This includes Guides and Codes of Practice for occupations in which radiation is commonly used, such as in diagnostic radiology, industrial radiography, nuclear gauges, radiotherapy, etc.
- **Establish/improve licensing and inspection programmes.**
- **Orphan sources.** Efficient strategies and actions will be implemented to deal with orphan source identification and recovery.
- **Integrated management systems.** These will be addressed, together with human resources development, to enhance outreach programmes.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

Regulatory infrastructure will be established or enhanced in line with international safety standards. Regulatory authorities in participating Member States will have improved competence to effectively carry out their responsibilities ensuring the protection of people and the environment against the adverse effects of ionizing radiation. With adequate regulatory and safety infrastructures in place, Member States will be able to explore and expand their use of nuclear science and technology for sustainable development.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2017	160 500
2018	74 900
2019	149 800
Total	385 200

This project is co-funded from TCF with an amount of EUR 1 686 000

Building competent authority and effectiveness on regulating the transport of radioactive material (RAF9060)

THE CHALLENGE

Radioactive materials are used widely in the medical, agricultural and industrial sectors. Each Member State has the responsibility to establish the necessary legislative and regulatory framework, and to apply international safety regulations, for the safe transport of radioactive materials on land, water and in the air. Technical and human resources need to be built and strengthened in Africa to effectively apply safety regulations, as well as to ensure the safety of people and the protection of the environment.

IAEA RESPONSE

The project's objective is to train professionals to become safety regulators in those participating Member States lacking such regulators. In Member States that already have safety regulators, training will be provided to enhance their skills to draft, review and revise transport safety regulations, and to monitor compliance of the transport of radioactive materials through their territories with established safety regulations.

The project will facilitate the exchange of experience and knowledge, coordinate training and mentoring, and develop broad-based awareness and communication aimed at enhancing synergies among groups of states to develop a sustainable co-operation network.



PROJECT ACTIVITIES

- **Prepare national plans** and develop training materials for regulators and relevant stakeholders.
- **Conduct schools** on drafting transport regulations and guidance materials.
- **Harmonize** transport practices in Member States involved in mining activities.
- **Harmonize** procedures in Member States for the creation and management of inventories of radioactive material and the definition of import/export requirements.
- **Develop** a website for the regional network

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Africa



EXPECTED RESULTS

As a result of the project, participating Member States will have the capacity to ensure the safe transport of radioactive materials, in line with international safety regulations, at the national and the regional level. Each Member State will have a trained safety regulator with the relevant expertise and know how. Networks will be established within and between Member States in the region. As a consequence, radioactive materials can be transported safely and reliably, with reduced denials of shipment due to non-compliance with safety regulations.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	149 800
2017	189 925
Total	339 725

This project is co-funded from TCF with an amount of EUR 822 800

Supporting human resource development and nuclear technology (RAS0073)

THE CHALLENGE

The Asia-Pacific region is particularly exposed to earthquakes and tsunamis, killing thousands of people, wreaking vast economic destruction and damaging cultural heritage sites as well as important public buildings. Many countries are, however, not sufficiently prepared for large-scale seismic events and need to increase their national capacity to provide a prompt response.

IAEA RESPONSE

The nondestructive testing (NDT) method, including radiography among others, can be used to test the integrity of critical buildings and structures, preventing their collapse aftermath of a natural disaster. Radiotracers can be utilized to assess the structural integrity of buried water, oil and natural gas distribution networks for underground leakages.



PROJECT ACTIVITIES

- Needs assessment to identify the needs, existing capabilities and complementarities in the region.
- Training of NDT professionals already qualified in conventional NDT methods.
- Provision of equipment to assess the integrity of civil infrastructure following natural disasters.

DURATION

Four years

BENEFICIARY COUNTRIES

Bangladesh, Cambodia, Lao P.D.R., Myanmar, Nepal and Pacific Islands Member States

EXPECTED RESULTS

Improved capabilities for the use of NDT methodologies to verify the integrity of civil infrastructure in the aftermath of natural disasters.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2017	635 000
2018	265 000
Total	900 000

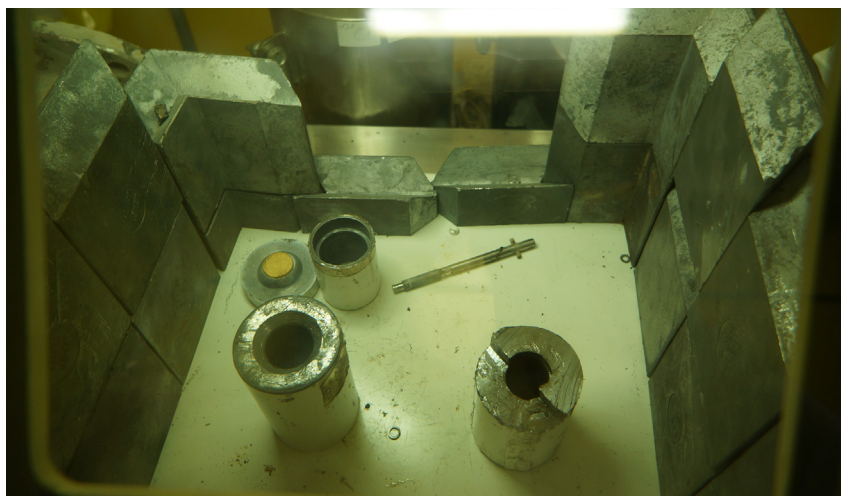
Conducting the comprehensive management and recovery of radioactive and associated mineral resources (RAS2019)

THE CHALLENGE

The Asian and Pacific region is a major consumer of raw mineral materials, including uranium. However, production of the required materials is not sufficient to meet demand, mainly because the mineral ore generally available in the region is predominantly low-grade, unconventional and difficult to process. Radioactive and critical material that could be extracted as a co- or by-product of other primary minerals like rare-earth and tin are important in the region, but the capacity to address the challenges related to their recovery and management is lacking. Creating a baseline capability to address this deficiency would greatly assist Members States in the region, while ensuring a higher performance of activities related to comprehensive extraction projects.

IAEA RESPONSE

The project aims to enhance capacity in the sustainable extraction of radioactive and associated materials such as uranium, thorium and rare-earth elements that can strengthen the socioeconomic resilience of the mining sector in the region. Emphasis is on promoting downstream processing of ore concentrates, by-products and residues to generate value-addition and foster sharing of technology and competencies with rural mineral centres that can produce the raw materials. This will foster agro-industries, ensure environmental sustainability and alleviate poverty through the creation of employment opportunities.



PROJECT ACTIVITIES

- **Assess.** Value addition opportunities from reprocessing and the recycling of mining and processing residues will be assessed.
- **Optimize.** Mineral extraction parameters will be optimized to increase recovery efficiencies.
- **Uranium processing requirements** will be reviewed.
- **Training.** Courses will focus on processing from low-grade and unconventional mineral ores.
- **Centres of excellence.** Mineral processing development centres will be strengthened.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The project is expected to result in enhanced technical and managerial capacity in mining and processing of radioactive minerals, by application of comprehensive extraction techniques and with a well-accepted environmental and social management plan.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	74 900
2017	164 887
2018	79 287
2019	66 875
Total	385 949

This project is co-funded from TCF with an amount of EUR 560 000

Complementing conventional approaches with nuclear techniques towards flood risk mitigation and post-flood rehabilitation efforts in Asia (RAS5069)

THE CHALLENGE

Floods are the most frequent of all natural disasters and East Asia and the Pacific, along with South Asia, are particularly vulnerable. Climate change and variability are expected to bring about increased typhoon activities, rising sea levels and out-of-phase monsoon seasons. These can trigger devastating floods, endangering the population and causing serious losses to people's livelihoods, including to agriculture and livestock.

Floods have a tremendous socioeconomic impact, wiping out decades of investments in infrastructure and the personal wealth of people, as well as impeding development. The restoration of flood-stricken areas usually takes time, resulting in long phases in which business, trade and commerce are hindered.

IAEA RESPONSE

The IAEA has extensive experience in providing technical support to its Member States in using nuclear techniques in combination with conventional approaches to track the sources and pathways of diseases, nutrients, and soil and water movement within an agricultural landscape. This contributes to an integrated solution to flood management and rehabilitation.

This project aims to strengthen Member States' capacity in flood management, so that sound scientific knowledge is available for forecasting both the occurrence and the potential extent of flooding. Capacities will be enhanced through area-wide soil water storage monitoring under different irrigation management practices to minimize flood risks.



PROJECT ACTIVITIES

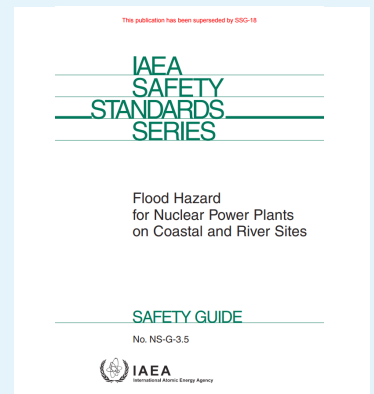
- **Building capacity.** This aims to make agricultural production systems resilient to floods by strengthened capacity in Member States for flood risk management/mitigation through on-farm and area-wide soil erosion-land degradation mapping, improved soil water storage and soil rehabilitation.
- **Developing capability in Member States.** This will focus on post-flood rehabilitation through an improved animal production/health response, and post-flood rehabilitation through improved flood and drought-tolerant crops.
- **Enhancing capacity in the Member States.** This will focus on using isotope hydrology for water resource assessment-management in river basins/flood plains, flood water harvesting and reservoir safety.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The project is expected to lead to strengthened capacity in flood management. This could positively impact the ability to take preventive measures to mitigate the effects of flooding events and thereby save lives and protect the health of the population, as well as their livestock

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	326 350
2015	331 700
2016	315 650
2017	326 350
Total	1 300 050

The activities for 2014-2015 have been implemented from TCF funds with an amount of EUR 242 965 and received extrabudgetary contributions in the amount of EUR 243 970.

Enhancing food safety laboratory capabilities and establishing a network in Asia to control veterinary drug residues and related chemical contaminants (RAS5078)

THE CHALLENGE

Food safety and quality have become increasingly important in recent years, not only in terms of protecting the health of the consumer and ensuring food security but also to meet requirements for international trade.

Many IAEA Member States in Asia and the Pacific face stiff competition in international food markets and must ensure a safe supply of agricultural products in order to meet the food safety and animal health requirements of importing countries. This requires laboratories operating at international standards.

IAEA RESPONSE

The objective of this project is to help Member States strengthen the capabilities of food safety laboratories and to establish a regional network of laboratories focusing on the control of veterinary drug residues, pesticides, mycotoxins and related chemical or natural contaminants in agricultural products. It also aims to promote the application of nuclear techniques in food safety programmes, alone or with complimentary non-nuclear tools, and to enhance the interaction of food safety laboratories with relevant stakeholders.



PROJECT ACTIVITIES

- **Capacity building.** This will focus on the training of personnel, as well as supporting the establishment or strengthening of monitoring programmes and quality management systems with the goal of meeting international food safety standards.
- **Enhance knowledge of ISO/IEC 17025:2005** standards and their applications.
- **Promote and enhance** nuclear/isotopic and complementary techniques in the screening for chemical and/or natural contaminants.
- **Data collection.** Data collected over the course of the project will facilitate the establishment of a database and enhance collaboration among participating laboratories.
- **Design a programme** for the surveillance of contaminants in selected foods in participating countries.
- **Facilitate the setup of techniques** for drug and pesticide residues and/or identification of gaps in national residue/ control monitoring programmes.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

Member States are expected to strengthen their laboratories with technical competencies and state of the art know-how and enhance their laboratory network. Detection and monitoring schemes in place will enable regulatory authorities to trace contaminated products back to the source, allowing preventive actions to be taken to avoid a recurrence.

The project is expected to have an impact on public health through the consumption of safer, good quality food. It will facilitate international trade by meeting export and import safety requirements for food commodities.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	32 100
2017	53 500
2018	42 800
2019	32 100
Total	160 500

This project is co-funded from TCF with an amount of EUR 713 000 and received extrabudgetary contributions of EUR 77 704

Improving quality of life of cancer patients through streamlined and emerging therapeutic nuclear medicine techniques (RAS6074)

THE CHALLENGE

Cancer incidence is rising dramatically in Asia, resulting in a sharp increase in the number of patients needing palliative treatment. But in many Asian Member States only low cost isotope-based treatment options are available and there is limited expertise in the field of therapeutic nuclear medicine.

The use of radioisotope therapy has been proven to increase the quality of life of cancer patients through treatment, disease remission or palliation of pain. But the Asian region is not fully equipped with up-to-date knowledge or technical know-how of advances in the practice of therapeutic nuclear medicine.

IAEA RESPONSE

The project's objective is to train nuclear medicine professionals in the field of therapeutic nuclear medicine, in quality control and management of nuclear medicine, and in the preparation of radiopharmaceuticals for diagnostic and radionuclide therapy.



PROJECT ACTIVITIES

- **Building capacity in the following areas.**
- Role of nuclear medicine techniques in the treatment of thyroid diseases.
- Role of nuclear medicine techniques in the treatment of lymphomas and neuroendocrine tumours GI and liver cancer
- Role of SPECT and SPECT/CT/ PET/CT in the Management of cancer patients.
- Quality control for nuclear medicine and the preparation of radiopharmaceuticals for diagnosis and therapy.
- Targeted therapy and radioimmuno therapy quality management in nuclear medicine practices: focus on radioisotope therapy.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The project is expected to lead to strengthened therapeutic nuclear medicine practices in Asia, in compliance with international quality standards. Increased numbers of patients will benefit from treatment which will either treat the cancer and save their lives, or enhance their quality of life through palliation of the pain associated with cancer.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	139 100
2015	74 900
2016	101 650
2017	90 950
Total	406 600

The activities for 2014-2015 have been implemented from TCF with an amount of EUR 275 000

Optimizing the role of nuclear medicine techniques in the diagnosis and clinical management of childhood cancer and inborn diseases (RAS6075)

THE CHALLENGE

Nuclear medicine imaging techniques are also applied to enhance diagnosis and the management of childhood (paediatric) diseases, including cancer. Childhood nuclear medicine practice refers to examinations done on babies, young children and teenagers up to the age of 18. Nuclear medicine applications in children require a slightly different approach from those in adults, with regard to quality control and safety. As there is limited expertise in the field of paediatric nuclear medicine in the Asia and Pacific region, there is a need for developed, updated knowledge and improved skills.

IAEA RESPONSE

The project aims to enhance the capacities of the participating institutions in paediatric nuclear medicine and quality management, with emphasis on the appropriate use of Planar, SPECT (single photon emission computed tomography), SPECT/CT (computed tomography) and PET/CT (positron emission tomography) in paediatric medicine and paediatric oncology, including therapeutic applications. Nuclear medicine professionals will be trained in the appropriate use of the technologies to diagnose and manage paediatric cancer and inborn diseases.



PROJECT ACTIVITIES

Meetings and training courses on the following topics:

- The role of SPECT/CT and PET/CT in paediatric oncology and other conditions.
- The role of Planar, SPECT and SPET/CT in paediatric conditions (oncology, infection, inflammation, GI, musculoskeletal disease).
- The application of radionuclide techniques in paediatric nephro-urology practice.
- The role of PET/CT in paediatric oncology, including therapeutic application (radioisotope therapy) in childhood cancers and related conditions.
- Quality management systems in nuclear medicine practice focusing on paediatric nuclear medicine.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

Enhanced human resource capacities and capabilities in the field of paediatric nuclear medicine, including diagnosis, treatment, and quality management at both the national and regional level. Nuclear medicine professionals will have the necessary know how and skills to diagnose childhood cancer and inborn diseases, and to manage paediatric patients in conformity with international quality standards. Better quality of life for paediatric patients during their treatment is expected as a result of improved care of paediatric patients and therapeutic nuclear medicine practices.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	181 900
2015	101 650
2016	74 900
2017	155 150
Total	513 600

Some activities for 2014-2015 have been implemented from TCF with an amount of EUR 270 000

Strengthening hybrid imaging in nuclear medicine in Asia (RAS6079)

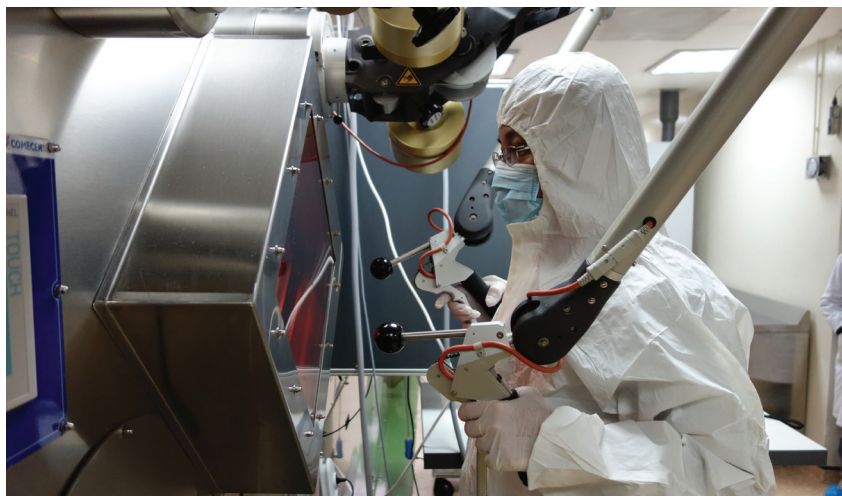
THE CHALLENGE

Chronic and non-communicable diseases, especially cardiovascular diseases and cancer, have become the leading causes of death worldwide, including in Asia. Progress in nuclear medicine is currently driven by advances in imaging technology and the associated development of specific radiopharmaceuticals. The combination of positron emission tomography (PET) and single photon emission computed tomography (SPECT) cameras with computed tomography (CT) into new hybrid systems is now a standard method for diagnostic imaging. The use of nuclear techniques in nuclear medicine hybrid imaging modalities, specifically in cardiovascular diseases and cancer management, has been proven to increase the quality of life of patients through improved management of cancer, including disease remission or palliation of the pain associated with cancer.

Clinical applications using hybrid imaging have started and are expanding in Asia. But there is a need for Member States in the region to be continuously informed and updated regarding this technology to improve clinical management, patient care and patient quality of life through appropriate patient management.

IAEA RESPONSE

The project aims to build and enhance human resource capacities in developing Member States in Asia in the field of hybrid imaging in nuclear medicine, and improve its quality management. It will lay the foundation for continuous professional development and capacity building efforts in the field of hybrid imaging in nuclear medicine.



PROJECT ACTIVITIES

Support capacity building in the following areas:

- The role of hybrid imaging technologies in nuclear oncology.
- The role of hybrid imaging technologies in nuclear cardiology.
- The role of hybrid imaging technologies in paediatric nuclear medicine.
- Improving quality management in nuclear medicine practices (QUANUM) I: focus on hybrid imaging technologies for adult and paediatrics.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia



EXPECTED RESULTS

The project is expected to result in state-of-the-art know-how in the appropriate user hybrid imaging techniques in nuclear medicine in participating Member States. Strengthened management of patients with non-communicable diseases, in particular cardiovascular diseases and cancer, will result in increased quality of life for patients.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	128 400
2015	74 900
2016	80 250
2017	64 200
Total	347 750

The activities for 2014-2015 have been implemented from TCF with an amount of EUR 327 411

Preventing overweight and obesity, and promoting physical activity among children and adolescents (RAS6080)

THE CHALLENGE

As Asian countries populations undergo economic and demographic transitions, lifestyles are becoming more sedentary and diets more energy intensive, with higher fat content. Obesity is a key risk factor for non-communicable diseases such as diabetes, cardio-vascular diseases, hypertension, osteoporosis and some cancers. Obesity in children, in particular, is also on the rise and is a cause of growing concern.

In order to address increasing obesity and introduce preventive intervention programmes, an in-depth understanding of the causes of obesity in children is necessary. Body composition of children and adolescents is an important indicator of the quality of their diet, physical activity and energy expenditure.

IAEA RESPONSE

The doubly-labelled water method, a stable isotope technique, is considered the most appropriate method for assessing the body composition of adults and children undertaking normal activities of daily life. Compared to conventional techniques, this method, which does not involve radiation, offers much more sensitive and specific measurements.

The project aims to strengthen the technical capacities and competencies of participating Member States in using the doubly-labelled water method to assess the body composition of children and adolescents. This will provide policymakers with an evidence base to introduce targeted and effective policies and strategies to address obesity.



PROJECT ACTIVITIES

- **Standardize and validate** assessment methods for body composition and physical activity expenditure methods.
- **Provision of equipment** and material needed for assessment of physical activity and body composition.
- **Establish baseline values** for body composition and physical activity.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The collected data will provide Governments with an evidence-base to select and introduce targeted, effective and also preventive intervention programmes to improve the nutritional status of children. Ultimately, a healthy and active childhood may prevent the risk of non-communicable diseases in adult life.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	112 350
2015	187 250
2016	181 900
2017	144 450
Total	625 950

The activities for 2014-2015 have been implemented from TCF with an amount of EUR 210 000

Strengthening the regulatory infrastructure for radiation, transport and waste safety (RAS9073)

THE CHALLENGE

Some Member States in Asia and the Pacific have not sufficiently put in place the essential elements of an effective regulatory infrastructure to ensure proper control of radiation sources. Others need to engage in a structured programme to sustain and improve their existing infrastructure. Some Member States, including those that have implemented regulatory programmes with IAEA assistance, have yet to achieve full conformity with the relevant IAEA safety standards.

IAEA RESPONSE

The objective of this project is to foster safety in all activities related to ionizing radiation by supporting Member States in the establishment and improvement of national regulatory infrastructure for safety in accordance with relevant IAEA safety standards. This includes facilitating the establishment of national strategies for education and training in radiation, transport and waste safety and building competence through high-level education and training.

To strengthen regulatory infrastructure for radiation, transport and waste safety, the project will encompass the periodic evaluation of regulatory infrastructure status, addressing gaps and providing support for the identified priorities to ensure enhanced effectiveness and sustainability of regulatory programmes in Member States.



PROJECT ACTIVITIES

- **Knowledge and skills.** Activities will focus on enhancing the knowledge and skills of regulatory personnel responsible for establishing/strengthening regulatory infrastructure.
- **Radiation safety regulations.** This includes preparation and revision of regulations in accordance with IAEA safety standards and the code of conduct on safety and security of radioactive sources.
- **Regulatory infrastructure.** Activities include applying a graded approach to the implementation of regulatory functions, establishing/strengthening national regulatory infrastructure, strengthening regulatory control in specific areas and supporting regulatory bodies in participating countries in establishing a management system.

DURATION

Two years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

Upon completion of the project it is expected that participating Member States will have developed regulatory bodies' national capabilities to manage and maintain effective regulatory control of radiation sources in accordance with relevant IAEA safety standards and guidance.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2015	617 925
2016	369 150
Total	987 075

This project is co-funded from TCF with an amount of EUR 80 000

Enhancing and strengthening national regulatory infrastructure for safety through self-assessment (RAS9074)

THE CHALLENGE

The use of ionizing radiation sources and radioactive materials in various socio-economic developmental activities in Asia and the Pacific is increasing. But not all aspects of the regulatory framework or essential regulatory activities, based on IAEA safety standards, are in place in many Member States, including those that have received IAEA assistance on regulatory programmes.

IAEA RESPONSE

The project aims to foster the safety of all activities related to ionizing radiation by supporting Member States in the establishment and continuous improvement of sustainable national regulatory infrastructure for safety, in accordance with relevant IAEA safety standards and guidance.

Recognizing the importance of developing a methodological approach and tools to assess conformity with international standards, the Self-assessment of Regulatory Infrastructure for Safety, developed by the IAEA, includes comprehensive questionnaires and software to assess the status of the infrastructure elements, analyse the assessment results and develop action plans to improve the effectiveness and efficiency of regulatory bodies, thus significantly contributing to strengthening national regulatory infrastructures.



PROJECT ACTIVITIES

- **Self-assessment.** Develop the capacity of regulatory bodies to perform self-assessment of their national regulatory infrastructure for safety, using IAEA methodologies and tools.
- **National implementation plan.** Prepare plan for self-assessment and organize the entire assessment project, including the response phase of the self-assessment cycle and its analysis.
- **Action plan for improvement.** Identify gaps and overlaps in regulatory infrastructure and performance and develop an action plan to address areas of weakness.
- **Strengthen current safety infrastructure.** Appropriate actions will be taken, consistent with the requirements of the IAEA Safety Standards.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The project is expected to result in the establishment and continuous improvement of sustainable national regulatory infrastructure for safety in accordance with relevant IAEA safety standards and guidance, as well as enhanced understanding of the need for increasing ownership in achieving them.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2015	96 300
2016	86 670
Total	182 970

This project is co-funded from TCF with an amount of EUR 105 000

Strengthening of national capabilities for response to nuclear and radiological emergencies (RAS9076)

THE CHALLENGE

Radiation emergencies can result from accidental releases at nuclear facilities, radiological accidents involving lost or uncontrolled radiation sources or malicious acts involving radioactive material. Over the years there have been emergencies resulting in radiation injuries to exposed individuals and/or the contamination of large areas, which has affected the living conditions of communities. While many countries in Asia and the Pacific have made significant progress in establishing their national capabilities to respond to such emergencies, further progress is needed in certain critical areas.

IAEA RESPONSE

This project aims to strengthen and harmonize national response mechanisms of Member States in Asia and the Pacific to deal with radiological and nuclear emergencies and to improve their conformity with IAEA safety standards. Special emphasis will be on addressing the specific needs of countries in the field of emergency preparedness and response, while supporting the maintenance of high performance in all participating Member States. At the same time, the specific needs of countries with minimum medical capabilities will be addressed in order to provide initial formal assessment, at the regional as well as the national level.



PROJECT ACTIVITIES

- **Medical capabilities.** Capabilities for responding to radiation emergencies at the regional level will be developed and/or strengthened.
- **Emergency response mechanisms.** National and regional capabilities and mechanisms for responding to nuclear or radiological emergencies will be developed/supported for sustainability.
- **Notification and Assistance.** Disseminating knowledge amongst participating Member States about their roles and responsibilities under the Notification and Assistance Conventions.

DURATION

Three year

BENEFICIARY COUNTRIES

IAEA Member States in Asia and the Pacific



EXPECTED RESULTS

The project is expected to strengthen and harmonize nuclear and radiological emergency preparedness and response in Asia and the Pacific, in conformity with IAEA standards. This will lead to the increased protection of people and the environment in the event of nuclear and radiological emergencies.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2015	299 600
2016	155 150
2017	284 406
Total	739 156

This project is co-funded from TCF with an amount of EUR 87 600

Supporting regional nuclear emergency preparedness and response in the Member States of the ASEAN region (RAS9077)

THE CHALLENGE

Several countries in South East Asia are embarking on or planning for nuclear power programmes. Reliable and effective emergency preparedness and response arrangements are therefore necessary at both the national and regional level in order to protect people and the environment in the case of accidental release of radioactive material into the environment. There is also the need for a regional approach on information sharing, equipment specifications and defining the type of radiation monitoring data exchanged.

IAEA RESPONSE

This project is the first phase of a multi-phase intervention leading to the establishment of a regional environmental radioactivity database, maintained by a regional data centre measuring radioactivity in the environment, and a more integrated planning and coordinated response for nuclear emergencies at the regional level. It focuses on the immediate needs for coordination, namely technical information compilation and exchange, coordination of decisions and the dissemination of public information. Future phases will examine the possibility of greater integration and optimization of response resources on a regional level.



PROJECT ACTIVITIES

- **Regional hazard assessment.** This will review existing arrangements.
- **Early warning.** An inventory of capabilities will be prepared. Monitoring capabilities will be improved.
- **Information sharing.** Functional and technical requirements will be defined to facilitate information exchange amongst ASEANTOM countries.
- **Gaps and technical issues.** Existing capabilities will be reviewed towards harmonization.
- **Public communication.** A regional plan will be developed.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States of the ASEAN region



EXPECTED RESULTS

The project is expected to strengthen emergency preparedness and response capacity to protect people and the environment in the event of a nuclear and radiological incident. Enhanced integrated planning and coordinated response for nuclear emergencies at the regional level will be achieved through an established Southeast Asian regional radiation monitoring system network with quality data meeting international standards.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	5 350
2017	235 400
2018	3 210
Total	243 960

This project is co-funded from TCF with an amount of EUR 605 500

Enhancing energy planning, nuclear power infrastructure development and nuclear safety regulatory oversight (RER2013)

THE CHALLENGE

The development of nuclear power programmes is underway or being considered in several Member States in Europe. Previous IAEA projects supported regulatory authorities in the establishment and development of nuclear safety infrastructure, including a regulatory framework consistent with IAEA safety standards. However, new needs have been identified for regulatory bodies in countries considering embarking on nuclear power and in those expanding their existing nuclear power capacities. They include issues related to nuclear safety regulation during the construction and commissioning of new nuclear power plant units.

IAEA RESPONSE

This project is intended to further support the development of nuclear power infrastructure including planning, building and assessing a nuclear power infrastructure for the introduction and/or expansion of nuclear power in Europe. Assistance will be given to Member States in strategy development, feasibility, financing, and nuclear power infrastructure programme management, related to the nineteen issues identified in the IAEA's Milestone document.



PROJECT ACTIVITIES

- **Multi-criteria decision analysis.** Training will be given on the methodology of energy needs assessment.
- **Experiences and best practices.** Participating Member States will share experiences and expert advice in areas relevant to the introduction of a nuclear power programme.
- **Experiences and capacity building.** Participating Member States will exchange experiences with the focus on building capacity in nuclear safety oversight.

DURATION

Two years

BENEFICIARY COUNTRIES

IAEA Member States in Europe



EXPECTED RESULTS

The project is expected to result in strengthened national capabilities in energy planning and areas relevant to the introduction or expansion of nuclear power programme and nuclear safety oversight.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	12 840
2017	12 840
Total	25 680

This project is co-funded from TCF with an amount of EUR 470 000

Supporting the management of fruit flies in the Balkans and the Eastern Mediterranean (RER5021)

THE CHALLENGE

In parts of the Balkans and the Eastern Mediterranean, the Mediterranean fruit fly causes major damage to fruits and vegetables. It reduces fruit harvests and increases insecticide use, thereby exerting a direct impact on production costs. It also causes difficulties in the international trading of fruit and vegetables due to quarantine regulations and insecticide residue limits imposed by some countries. The establishment of a fruit fly low prevalence area is a priority for Member States that trade fruit and vegetables for external markets. The recent appearance of exotic fruit fly species in Africa and the Middle East poses an additional threat to fruit and vegetable production in the Balkans and the Eastern Mediterranean.

IAEA RESPONSE

The project will support the maintenance of a surveillance system to monitor fruit fly populations as well as to detect exotic fruit flies. It will implement integrated pest management strategies that will suppress the fruit fly population in order to establish areas of low pest prevalence, help reduce fruit damage, respond to an exotic fruit fly outbreak and assess the impact of these strategies on fruit fly population densities and fruit damage levels.



PROJECT ACTIVITIES

- **Surveillance and monitoring.** Training will focus on common surveillance protocols and the deployment of accurate monitoring systems to detect exotic fruit fly pests.
- **Information sharing.** The sharing of information between participating Member States and the international community will be facilitated.
- **Fruit fly suppression.** Training will be provided on implementing fruit fly population suppression and related sterile insect technique activities.
- **Awareness.** Awareness raising will be facilitated between the sterile insect technique community, stakeholders and end users in selected areas.
- **Sterile fly emergence and releases.** Training will be given on implementing releases in selected areas. Sterile pupae will be procured and sterile flies released.

DURATION

Two years

BENEFICIARY COUNTRIES

IAEA Member States in Europe



EXPECTED RESULTS

The project will increase awareness, cooperation and technical capabilities to prevent, detect and address invasive exotic and established fruit fly pest outbreaks through the integration of the sterile insect technique with other suppression techniques. It is also expected that benefits will accrue to all commercial stakeholders in fruit production and, ultimately, the exporting sector.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	320 572
2017	246 207
Total	566 779

This project is co-funded from TCF with an amount of EUR 88 500

Establishing genetic control programmes for *Aedes* invasive mosquitoes (RER5022)

THE CHALLENGE

Given the substantial increase in the spread of invasive mosquito species in Europe since the late 1990s, there is an urgent need for Member States to implement active surveillance measures. Effective mosquito control is increasingly hindered by growing public opposition to extensive insecticide use, as well as by increased resistance to insecticides developed by dengue vectors. Additionally, only one insecticide is officially approved for mosquito control in Europe. There is, therefore, increasing demand for complementary tactics in mosquito control that are effective, sustainable and friendly to the environment.

IAEA RESPONSE

One such environmentally friendly method is the sterile insect technique. Based on overall technological advances, the mosquito sterile insect technique package will be implemented in several Member States in Europe as a component of area-wide integrated pest management programmes.

This project aims to strengthen coordination of strategic regional efforts aimed at activating synergies between the capacities and expertise available in the countries involved. Furthermore, it aims to increase awareness of the specific advantages of the sterile insect technique, and to enhance Member States' scientific, technical and organizational capabilities regarding the sterile insect technique application to target invasive mosquito species on an area-wide basis.



PROJECT ACTIVITIES

- **Developing capacity.** Training entomologists in mosquito rearing and sterilizing techniques.
- **Developing capacity in sterile insect technique field operations.** This includes surveillance techniques and sterile male releases for suppression of wild populations.
- **Mosquito rearing and surveillance.** A network for this will be established at both national and regional level.
- **Pilot suppression trials.** Support will be given to trials implemented at selected sites.

DURATION

Three years

BENEFICIARY COUNTRIES

IAEA Member States in Europe



EXPECTED RESULTS

It is expected to establish control of the invasive mosquito species *Aedes* in affected European countries through the integration of the sterile insect technique in vector control programmes in selected localities. The project will also play a key role in the development of area-wide sterile insect technique application against invasive disease-transmitting mosquito species in Europe.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	168 739
2017	278 200
2018	85 600
Total	532 539

This project received an extrabudgetary contribution amounting to: EUR 138 631

Applying nuclear techniques to design and evaluate interventions to prevent and control obesity in adolescents in South-Eastern Europe (RER6034)

THE CHALLENGE

Obesity is one of the greatest public health challenges of the 21st century. Excess weight drastically increases a person's risk of developing a number of non-communicable diseases, including cancer, cardiovascular disease and diabetes. Obesity in adolescents is of particular concern in Europe, where changing diet and lifestyle mean that today more than 50 percent of both men and women in the region are overweight, and roughly 23 percent of women and 20 percent of men are obese.

Studies are needed to obtain relevant data that will contribute to science-based decisions and the development of appropriate strategies to counter this growing problem.

IAEA RESPONSE

The stable isotope technique can be used effectively to provide accurate information on overweight and obesity. This project intends to guide the design of interventions to prevent and control obesity in those European Member States where it represents a major public health problem and to evaluate existing programmes to contribute to the improvement of strategies. This will be done by training counterparts in the use of the stable isotope technique and in conducting studies on adults.



PROJECT ACTIVITIES

- **Training.** This will focus on the assessment of body composition by using the stable isotope technique.
- **Procure** laboratory and field supplies and consumables.
- **Harmonize** laboratory procedures.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Europe



EXPECTED RESULTS

This project is expected to contribute to the overall prevention and control of non-communicable diseases, as well as to an improvement in the assessment of obesity risk factors in adolescents by accurate measurements of adiposity using nuclear techniques.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	236 684
2017	58 850
2018	80 250
2019	42 800
Total	418 584

Some activities for 2016 have been implemented from TCF with an amount of EUR 221 200

Supporting human resource capacity building for developing and implementing integrated programmes for remediation of areas affected by uranium mining (RER9145)

THE CHALLENGE

The necessity of developing and improving the practical competencies of European Member States with respect to designing and implementing remediation programmes for areas affected by uranium mining was identified in previous years. A number of projects were implemented, primarily directed towards regulatory infrastructure support and preparatory activities such as environmental impact assessment and monitoring.

IAEA RESPONSE

This project is aimed at filling gaps by targeting the development of competencies in the management and composition of remediation programmes and projects, as well as by meeting the need for workers and managers in that area. It will also facilitate the establishment of a mechanism for implementing phase one of the Eurasian Economic Community's Remediation of Uranium Mining Areas inter-state target programme and further programmes for the rehabilitation of areas affected by uranium mining and milling.



PROJECT ACTIVITIES

- **Unified curricula.** These will be developed for staff in participating Member States to ensure uniformity in approaches, practices and standards to efficiently implement reclamation and remediation related activities.
- **Exchange experience.** Relevant experience will be exchanged among participating Member States. Experienced countries will share knowledge with participating Member States.
- **Advise on national approaches.** Advice will be given to ensure conformity of relevant national approaches to international standards (IAEA and others).

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Europe



EXPECTED RESULTS

The project will help develop the required skills and competencies of qualified personnel in the management of remediation programmes and in addressing nuclear legacy problems in Member States affected by uranium mining.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2018	224 700
2019	224 700
Total	449 400

This project is co-funded from the TCF with an amount of EUR 279 000. The years 2016-2017 are fully funded from TCF.

Strengthening fruit fly control using the sterile insect technique in an area wide and integrated pest management approach for the protection and expansion of horticultural production (RLA5070)

THE CHALLENGE

The fast-growing horticultural sector is an important driver for economic development in Latin America and the Caribbean, producing fruit and vegetables for local consumption and for the international market. The Mediterranean fruit fly and a range of native fruit flies are affecting the quality and quantity of the produce, causing revenue loss. Farmers have tried to control the pests using insecticides, but with limited success. In addition, insecticides are not only costly for the farmers but they also kill useful insects, and can be hazardous to the environment.

IAEA RESPONSE

The project aims to strengthen, expand and harmonize existing fruit fly control programmes in Latin America and the Caribbean. It will assist with the timely detection of non-native species of fruit flies and act promptly to prevent their establishment. Support will be given to the development of free and/or low prevalence fruit fly areas.

By strengthening fruit fly control using the sterile insect technique (SIT), the project aims to reduce reliance on chemical controls. It will also promote coordination among national and regional plant protection organizations and other relevant public and private sectors in order to support and coordinate efforts across the region.



PROJECT ACTIVITIES

- **Fruit fly trapping and control systems.** Activities will focus on harmonization protocols.
- **Fruit fly surveillance.** This will focus on strengthening surveillance, including for fruit fly species not present.
- **Application of integrated fruit fly management,** including SIT, in fruit and horticultural areas of interest.
- **Monitoring areas** with official declaration, according to their phytosanitary status.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean



EXPECTED RESULTS

Participating Member States will have the technical capacity and know how to use and integrate SIT into an area-wide approach to monitoring and controlling the presence of harmful fruit flies. This will lead to improved quality and quantity of fruit and vegetables produced in the region, economic growth and food security. The limited or non-use of pesticides and other chemicals will protect beneficial insects and the environment.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	104 860
2018	834 600
Total	939 460

This project is co-funded from TCF with an amount of EUR 554 000. The year 2017 is fully funded from TCF.

Strengthening regional capacity in Latin America and the Caribbean for integrated vector management approaches with a sterile insect technique component to control *Aedes* mosquitoes as vectors of human pathogens, particularly the Zika virus (RLA5074)

THE CHALLENGE

Mosquitoes may carry pathogenic micro-organisms that cause infectious diseases resulting in severe morbidity or lethality. The integrated population control of the insect vector is necessary and considered the most effective way to control and manage mosquito's population, particularly when the nuclear sterile insect technique is also involved.

Due to rapid transport at both regional and international level, *Aedes*-transmitted diseases, i.e., dengue, chikungunya, Zika and yellow fever, could rapidly spread from one country to the next. Therefore, information sharing and cooperation to control *Aedes* mosquito among affected neighboring countries are needed.

IAEA RESPONSE

Through its technical cooperation programme, the IAEA contributes to strengthening national and regional capacities for the population control of *Aedes* mosquito species transmitting Zika and other *Aedes*-borne diseases using IVM approaches with an SIT component.

More research is required in order to be able to mass-rear, sterilize and release mosquitoes at the scale required in Member States. This project proposes to enhance the IAEA's scientific and technical capacity to provide the support Member States require in this area.



PROJECT ACTIVITIES

- Development of strains required for an integrated vector management approach for *Aedes aegypti* and *Aedes albopictus* mosquitoes.
- Development of a method to separate male and female mosquitoes.
- Improve mosquito rearing efficiency, handling, shipping and air release.
- Evaluation and quality control analysis of strains to be sent to Member States.
- Technical backstopping of ongoing technical cooperations project activities.

DURATION

Five years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean

EXPECTED RESULTS:

The development and transfer to Member States of evaluated strains of *Aedes aegypti* and *Aedes albopictus* mosquitoes, which will be used in integrated vector management approaches with an SIT component.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016/17	895 590
2017/18	640 930
2018/19	592 780
2019/20	592 780
Total	2 722 080

Supporting capacity building of human resources for a comprehensive approach to radiation therapy (RLA6072)

THE CHALLENGE

Latin America and the Caribbean has a shortage of health professionals in radiotherapy, which needs to be addressed. As the incidence of cancer continues to rise, the capacity and availability of human resources must be improved. At the same time, the availability of new technologies for cancer radiotherapy means that existing health professionals need to be trained to offer quality treatments, implement new techniques and incorporate new technologies.

IAEA RESPONSE

The IAEA, through its Technical Cooperation projects, provides comprehensive quality assurance programmes in radiation medicine to promote safe and effective services in radiation therapy, diagnostic radiology and nuclear medicine.

This project aims to establish the use of new techniques and technologies as a standard in Latin America and the Caribbean. It will identify and designate training centres for the training and updating of radio oncologists, medical physicists and radiation technologists. It will also review and assist in drafting a framework for the recognition of qualifications and specializations in the region. It aims to strengthen the culture of comprehensive quality assurance in radiotherapy and develop virtual tools to facilitate its practice.



PROJECT ACTIVITIES

- **Training.** Aimed at medical doctors and medical physicists in clinical radiotherapy physics, training will focus on the planning of 3D simulation-treatments, single clinical intensity modulated radiotherapy and image guided radiation therapy, paediatric radiotherapy, special techniques (radiation surgery, stereotactic radio surgery, stereotactic body radio therapy); fractionations in radiotherapy; comprehensive quality assurance in radiotherapy; and high-dose brachytherapy.
- **Quality assurance.** Activities will include the promotion of quality assurance programmes in radiotherapy.
- **Distance learning materials.** Existing materials in the Spanish language will be updated on the following subjects: breast, gynaecology and prostate cancer, the central nervous system and paediatric tumours, head and neck, gastro-intestinal system, bone sarcoma, and lung treatment.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean



EXPECTED RESULTS

Training will result in the enhanced skills and capacities of medical doctors and medical physicists at the participating institutes and will improve the quality of radiotherapy treatment for patients across the region. As a result, the project will contribute to the enhancement and increase of survival rates of patients, as well as improving quality of life.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	16 050
2015	180 830
2016	98 440
2017	103 790
Total	399 110

This project is co-funded from TCF with an amount of EUR1 093 000 and received extrabudgetary contribution amounting to EUR 705100.

Strengthening national infrastructure for end-users to comply with regulations and radiological protection requirements (RLA9075)

THE CHALLENGE

Occupational and medical radiation protection needs to be improved at both the national and the regional level in Latin America and the Caribbean. There is a need to reduce exposure to radiation and minimize the dose. National dose registries are either not in place or need to be enhanced to comply with regulatory requirements and international safety standards. There is also a lack of trained staff to optimize medical radiation protection, especially in consideration of new technologies such as digital techniques and computed tomography.

IAEA RESPONSE

The project will address radiation protection issues such as external and internal exposure to radiation including from natural resources, workplace monitoring, and the optimization of radiation doses in medical diagnostic imaging and radiation therapy, with particular focus on children and pregnant women. The project will focus on education and training of end-users and will assist Member States in establishing national strategies based on assessed needs and identifying existing resources.



PROJECT ACTIVITIES

- **Occupational radiation protection programmes.** Focus will be on assisting in the establishment of programmes at end user facilities/activities, including optimization of protection and safety culture.
- **Training technical support services.** Training will be provided in relation to individual and workplace monitoring, calibration and advisory services, including implementing operational national dose registries.
- **Training medical staff.** Training will be provided on radiation protection and optimization programmes in DR, CT, PET/CT, and interventional procedures (cardiology and non-cardiology), with emphasis on children and pregnant women.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean



EXPECTED RESULTS

The project will lead to increased radiation protection of workers and patients in medical and industrial applications in countries of the region. It will contribute to strengthened radiation protection programmes, in accordance with new basic safety standards, as well as to enhanced national capabilities through the availability of appropriately educated and trained personnel.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	22 256
2015	56 175
Total	78 431

This project is co-funded from TCF with an amount of EUR 2 519 000 and received extrabudgetary contribution amounting to EUR 724 479. The years 2016 and 2017 are fully funded from TCF.

Strengthening of national capabilities for response to radiation emergencies (RLA9076)

THE CHALLENGE

Radiation emergencies can result from accidental releases from nuclear facilities, radiological accidents involving lost or uncontrolled radiation sources or malicious acts involving radioactive material. Over the years there have been emergencies resulting in radiation injuries to exposed individuals and/or the contamination of large areas, which has affected the living conditions of communities. While many countries in Latin America and the Caribbean have made significant progress in establishing their national capabilities to respond to such emergencies, further progress is needed in certain critical areas.

Often, existing mechanisms are not well understood by all participating actors and communication links between regulators and civil defence authorities need to be strengthened. Additionally, countries across the region face several challenges at the structural, infrastructural, normative/regulative and strategic levels.

IAEA RESPONSE

The project aims to strengthen and harmonize the national response mechanisms of Member States to radiological and nuclear emergencies and to improve their conformity with IAEA safety standards. Based on recent assessments (including self-assessment, appraisal missions and peer reviews), and information on the IAEA Incident and Emergency Centre database, Member States in the region will be supported according to their needs.



PROJECT ACTIVITIES

- **Medical capabilities.** These will be strengthened for responding to radiation emergencies.
- **Regional capacity building.** Focus will be on long and medium term sustainability of emergency response mechanisms.
- **General, functional and infrastructural requirements.** Requirements will be assessed in order to achieve conformity with international standards.
- **Response and Assistance Network (RANET).** Radiation emergency response mechanisms will be registered under RANET.
- **Roles and responsibilities.** Focus will be on increasing awareness under the Assistance and Notification Conventions

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean



EXPECTED RESULTS

The project is expected to result in establishing adequate national mechanisms for responding to radiation and nuclear emergencies in line with IAEA safety standards and harmonized with those of other countries in the region. The mechanisms will enable governments to be well prepared and better able to respond to radiation and nuclear emergencies, leading to increased protection of people and the environment.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2014	133 750
2015	317 148
2016	42 800
Total	493 698

This project is co-funded from TCF with an amount of EUR 1 376 700 and received Extrabudgetary contribution amounting to EUR 387 871.

Strengthening cradle-to-grave control of radioactive sources (RLA9081)

THE CHALLENGE

Radioactive sources are widely used in industry, medicine, agriculture, research and education. If not handled safely, they can harm people and the environment. Several countries in Latin America and the Caribbean need to establish and/or strengthen their regulatory infrastructure to control radioactive sources during their useful life and once they become disused. In several Member States of the region there is a shortage of human resources trained in the control of radioactive sources. In addition, there is a strong need to raise awareness among decision makers, stakeholders and the public on how to safely manage radioactive sources throughout their entire life, from the cradle to the grave.

IAEA RESPONSE

This project addresses the cradle-to-grave management of radioactive sources in participating Member States, including national inventory of radiation sources and national policy and strategy for radioactive waste management. It will be organized in several phases, which can run in parallel depending on specific countries' technical feasibility and project conditions.

The project is also intended to foster regional and international cooperation that will provide technical and human resources beyond the life of this project to ensure its sustained success.



PROJECT ACTIVITIES

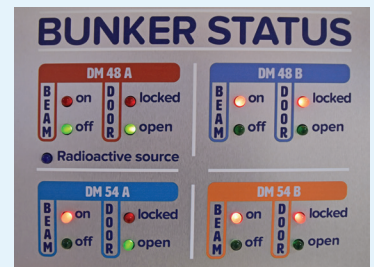
- **National register of sources.** This will include development and maintenance of an inventory of Disused Sealed Radioactive Sources (DSRS).
- **Management of DSRS.** This will include collection, conditioning, and safe and secure storage.
- **Regulatory framework for control of radioactive sources.**
- **Improve assistance towards strengthening the regulatory framework.**
- **International cooperation mechanisms** will be promoted.
- **Benefits and risks.** Activities will promote and raise awareness of the benefits and risks of sealed radioactive sources.

DURATION

Four years

BENEFICIARY COUNTRIES

IAEA Member States in Latin America and the Caribbean



EXPECTED RESULTS

At the end of the project a harmonized approach, consistent with IAEA Safety Standards, will be established and/or improved allowing for the sustainable, safe, adequate and permanent cradle-to-grave control of radioactive sources.

TOTAL ESTIMATED BUDGET

Estimated required Budget for unfunded activities (footnote/a)

Year	Footnote a/Budget (EUR) with 7% PSC included
2016	166 920
2017	285 690
2018	460 100
2019	408 740
Total	1 321 450

This project is co-funded from TCF with an amount of EUR 300 000 and received extrabudgetary contributions of EUR 420 292.