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ARCAL

**ACUERDO REGIONAL DE COOPERACIÓN PARA LA PROMOCIÓN DE LA CIENCIA Y LA TECNOLOGÍA NUCLEARES EN AMÉRICA LATINA Y EL CARIBE**

**PROCEDURES MANUAL**

**FROM ARCAL**

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| **ANNUAL REPORT**  **PROJECT COORDINATORS**  **JAMAICA 2019** |

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**Country summary**

Jamaica is presently participating in in seven (7) ARCAL projects. Five of these have had active participation from the project counterparts.

Table 1. Jamaican Projects

|  |  |
| --- | --- |
| Project Counterpart(s) | Project # and Title |
| Mr Haile Dennis | RLA1012: Developing a Capacity Building Programme to Ensure Sustainable Operation of Nuclear Research Reactors through Personnel Training (ARCAL CLI) |
| Dr Lisa Myers | RLA5068: Improving Yield and Commercial Potential of Crops of Economic Importance (ARCAL CL) |
| Dr Lisa Myers and Michelle Sherwood | RLA5070: Strengthening Fruit Fly Surveillance and Control Measures Using the Sterile Insect Technique in an Area Wide and Integrated Pest Management Approach for the Protection and Expansion of Horticultural Production (ARCAL CXLI) |
| Dr Simone Lawrence-Norton | RLA6077: Taking Strategic Actions to Strengthen Capacities in the Diagnostics and Treatment of Cancer with a Comprehensive Approach (ARCAL CXLVIII) |
| Dr. Asha Badaloo | RLA6079: Using Stable Isotope Techniques for Monitoring and Interventions to Improve Young Child Nutrition (ARCAL CLVI) |
| Ms. Danneille Townsend | RLA7022: Strengthening Regional Monitoring and Response for Sustainable Marine and Coastal Environments (ARCAL CXLV) |
| Mr Johann Antoine | RLA7023: Assessing Atmospheric Aerosol Components in Urban Areas to Improve Air Pollution and Climate Change Management (ARCAL CLIV) |

The projects have been seen as valuable to the country by all active project counterparts.

**VALUATION OF THE CONTRIBUTION OF THE RLA (ALL JAMAICAN) PROJECTS TO THE ARCAL PROGRAM**

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| --- | --- | --- |
| ITEM | REFERENCE VALUE | AMOUNT in € |
| 1. Experts/conference attendees sent abroad by the Agency (IAEA) | €300 per person per day (including travel days) | 7800 |
| 1. Local cost of the venues of a regional event held in the country (working group/training courses/workshops/ seminars) | €5000 per week | 5000 |
| 1. Local costs of national events included in the activity plan | €3000 per week | nil |
| 1. Fellowship holder whose local expenses are borne by the country | €3500 per fellowship holder per month | nil |
| 1. Publications | Up to €3000 | 2000 |
| 1. Database establishment and/or updating | Up to €5000 | 4000 |
| 1. Shipment of reagents/radiation sources/radioisotopes/other material | Up to €5000 | 4308.82 |
| 1. Services provided (e.g. irradiation of material) | Up to €5000 | nil |
| 1. Time worked as DTM | Maximum €700 per month | nil |
| 1. Time worked as project coordinator | Maximum €500 per month | 12500 |
| 1. Time worked as local specialists collaborating on projects (maximum of 3 specialists per project) | Maximum €300 per month per specialist | 21500 |
| 1. Contributions to the implementation of each project, broken down as:    1. internal/external subsistence    2. internal/external transport | Maximum €7500/project | 4000 |
| 1. Expenditure by the country on the project (infrastructure, equipment, etc.) | Maximum €10 000 | 13000 |
| **TOTAL** | | **74108.82** |

Some concerns have been raised regarding the language barrier and its impact on the selection of suitable candidates, however, in general there have been relatively few problems reported for the period.

This report has been compiled by Charles Grant, ARCAL National coordinator.

**INTRODUCTION**

**RLA1012:** "Developing a Capacity Building Programme to Ensure Sustainable Operation of Nuclear Research Reactors through Personnel Training"(ARCAL CLI)

The project began in 2016 with the aim of transferring knowledge through theory and practical training to increase the number and quality of trained professionals and technicians in the operation and maintenance of Nuclear Research Reactors to ensure the sustainable operation of these RR in region.

**1. EXECUTIVE SUMMARY**

Jamaica developed the e-learning module on “Introduction to Radiation Protection” as well as reviewed the content and wrote test questions for the “Introduction to Reactor Physics”, “Reactor Safety Analysis”, “Research Reactor Instrumentation and Control” and “Reactor Buildings and Structures” and “Security and Safeguards” modules.

Jamaica also organized and hosted the Intermediate Coordination Meeting in January 2018, where the primary objective was to review the drafts of training modules and provide feedback for their improvement. In fulfilling their commitments resulting from the outcomes of this meeting, the Jamaican counterparts revised and resubmitted the “Introduction to Radiation Protection” module based on feedback from other participants and provided comments for the improvement of other modules.

Jamaica participated in the following project meetings/workshops:

* January 22 – 26, 2018 – RLA1012 Intermediate Coordination Meeting, Kingston, Jamaica
* October 22 – 26, 2018 – Regional Training Course on Operation and Maintenance of Research Reactors Based upon the “Research Reactors” Module from the IAEA Training Material on Reactor Theory, Research Reactors and Operation and Safety of Research Reactors, Santiago, Chile.
* February 11 – 15, 2019 – RLA1012 Final Coordination Meeting, Ocoyoacac, Mexico.

**VALUATION OF THE CONTRIBUTION OF THE RLA PROJECT / 1012 TO THE ARCAL PROGRAM**

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| --- | --- | --- |
| ITEM | REFERENCE VALUE | AMOUNT in € |
| 1. Experts/conference attendees sent abroad by the Agency (IAEA) | €300 per person per day (including travel days) | nil |
| 1. Local cost of the venues of a regional event held in the country (working group/training courses/workshops/ seminars) | €5000 per week | 5000 |
| 1. Local costs of national events included in the activity plan | €3000 per week | nil |
| 1. Fellowship holder whose local expenses are borne by the country | €3500 per fellowship holder per month | nil |
| 1. Publications | Up to €3000 | 2000 |
| 1. Database establishment and/or updating | Up to €5000 | nil |
| 1. Shipment of reagents/radiation sources/radioisotopes/other material | Up to €5000 | nil |
| 1. Services provided (e.g. irradiation of material) | Up to €5000 | nil |
| 1. Time worked as DTM | Maximum €700 per month | nil |
| 1. Time worked as project coordinator | Maximum €500 per month | 6000 |
| 1. Time worked as local specialists collaborating on projects (maximum of 3 specialists per project) | Maximum €300 per month per specialist | 2700 |
| 1. Contributions to the implementation of each project, broken down as:    1. internal/external subsistence    2. internal/external transport | Maximum €7500/project | nil |
| 1. Expenditure by the country on the project (infrastructure, equipment, etc.) | Maximum €10 000 | 3000 |
| **TOTAL** | | **18700.00** |

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

Highlight actual contributions of project activities, quantitatively and qualitatively, as far as possible.

The RLA 1012 project has had a significant impact on the training programme for operators of the Jamaican research reactor. Before the start of the project, the training programme at the research reactor in Jamaica was informal and there was no prescribed structure. Training materials developed within the project are being used to revamp the training programme at the reactor for personnel involved in reactor operation, maintenance and utilization. Formal training materials are now in place and their development continues. We recently (November 2018) completed the reformatting of our SAR according to the guidelines in SSG-20 and also completed a document with our operating limits and conditions. As a result of the experiences shared from other reactors in the region during the workshops and training courses within the project, specific chapters from these documents are being incorporated into our training programme.

**3. RESULTS**

The project has also resulted in four (4) reactor operators being trained in reactor operation, maintenance and utilisation and the knowledge gained is being incorporated into the operations at the reactor resulting in enhanced safe operation and efficient utilization of the reactor. Of these four operators, three are senior personnel and have received training as trainers for new staff. The knowledge and experience gained from participating in these train-the-trainers workshops are being used to improve the training methodologies at the research reactor in Jamaica.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

Other Project Counterparts were late in the delivery of the agreed module materials which resulted in the project roll out being delayed.

**INTRODUCTION**

**RLA5068:** “Improving Yield and Commercial Potential of Crops of Economic Importance” (ARCAL CL).

The project began in 2016 with the aim of developing new mutant lines with improved tolerance to abiotic stresses and disease resistance for native crops such as papa, yucca, ginger, avocado, papaya, citrus, banana, and coffee.

**1. EXECUTIVE SUMMARY**

In 2015 Jamaica became a counterpart country under the IAEA Regional project RLA5/068 with the expectation of strengthening capacity in the area of induced mutation breeding and its applications. To date several training activities have been realized under this project. In 2018 Jamaica obtained a second IAEA National TC Project JAM/5/013 on Improving Crops by Using Experimental Mutagenesis and Diagnostic Technologies with the Scientific Research Council as the implementing agency in collaboration with the Ministry of Industry Agriculture and Fisheries Research and Development, Bodles Research Station.

**Objectives (Objectiva)**

***Ginger*** *(Zingiber officinale)*

To obtain mutant lines for evaluation for resistance to the fungus *Fusarium oxysporum* andbacterium *Ralstonia solanacearum (***Para obtener líneas mutantes de jengibre y name para la evaluación de la resistencia al hongo *Fusarium oxysporum* y la bacteria *Ralstonia solanacearum*)**

***Yam*** (*Dioscorea alata)*

To obtain mutant lines for evaluation for resistance to fungus *Colletotrichum gloeosporoides ((***Para obtener líneas mutantes de jengibre y name para la evaluación de la resistencia al hongo *Colletotrichum gloeosporoides*)**

**VALUATION OF THE CONTRIBUTION OF THE RLA PROJECT / 5068 TO THE ARCAL PROGRAM**

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| ITEM | REFERENCE VALUE | QUANTITY in Euros |
| 1. Experts / Lecturers sent abroad by the Agency (IAEA) | EUR 300 per person per day (travel days included) | 1500 |
| 1. Local expenses per regional event venue in the country (Working Group / Training Courses / Workshops / Seminars) | EUR 5,000 per week | 0 |
| 1. 3. Local expenses in national events, which are in the Activity Plan | EUR 3,000 per week | 0 |
| 1. 4. Scholar whose local expenses are assumed by the country | EUR 3,500 per month per scholar | 0 |
| 1. 5. Publications | Up to EUR 3,000 | 0 |
| 1. Creation and / or update of Database | Up to EUR 5,000 | 2000 |
| 1. Sending reagents, radioactive sources, radioisotopes, other materials | Up to EUR 5,000 | 0 |
| 1. Realization of services (eg irradiation of materials) | Up to EUR 5,000 | 0 |
| 1. Time worked as DTM | Maximum EUR 700 per month | 0 |
| Time worked as Project Coordinator | Maximum EUR 500 per month | 0 |
| Time worked as local specialists who collaborate with the project (maximum 3 specialists per project) | Maximum EUR 300 per month per specialist | 1800 |
| Contributions in the execution of each Project including the following points:   * 1. Internal / external per diem   2. Internal / external transport | Maximum EUR 7.500 / project | 2000 |
| Country expenses for the project (infrastructure, equipment, etc.) | Maximum EUR 10,000 | 0 |
| **TOTAL** | | **7300** |

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

Participants develop harmonized methods based on ISPM standards and experiences in their respective countries.

**3. RESULTS**

To date several training activities have been realized under this project Table 1. In 2018 Jamaica obtained a second IAEA National TC Project JAM/5/013 on Improving Crops by Using Experimental Mutagenesis and Diagnostic Technologies with the Scientific Research Council as the implementing agency in collaboration with the Ministry of Industry Agriculture and Fisheries Research and Development, Bodles Research Station.

|  |  |  |
| --- | --- | --- |
| **Name** | **Role** | **Affiliation** |
| **Dr Lisa Myers Morgan** | **Principal Research Director/IAEA National Country Counterpart Jamaica** | **Research and Development Division Ministry of Industry, Commerce, Agriculture and Fisheries (MICAF)** |
| **Ryan Francis** | **Research Scientist – Plant Biotechnology Unit** | **Scientific Research Council** |
| **Gillian Rowe** | **Process Development Officer - Plant Biotechnology Unit** | **Scientific Research Council** |
| **Dr Peta Gaye Chang** | **Chief Post Entry Officer Plant Pathologist** | **Research and Development (MICAF)** |
| **Alex Sybron MSc** | **Chief Plant Breeding Officer** | **Research and Development Division (MICAF)** |
| **Patrice Pitter BSc** | **Senior Plant Protection Officer -Pathology** | **Research and Development Division (MICAF)** |

Dr. Lisa Myers Morgan, Principal Research Director/IAEA National Country Counterpart Jamaica attended the Mid-Term Project Coordination Meeting 11-15 June 2018, Panamá City, Panamá.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

None reported.

**INTRODUCTION**

**RLA5070:** “Strengthening Fruit Fly Surveillance and Control Measures Using the Sterile Insect Technique in an Area Wide and Integrated Pest Management Approach for the Protection and Expansion of Horticultural Production” (ARCAL CXLI).

The project began in 2016 and will result in the development of horticultural capabilities, strengthening and standardization of monitoring and control of fruit flies present and not present, development of export protocols and the strengthening of existing fruit fly control programs, these aspects lead to the development of free and low fruit flies prevalence areas which leads to improved fruit and horticultural industry.

**1. EXECUTIVE SUMMARY**

Dr. Lisa Myers Morgan, Principal Research Director Research and Development Division Ministry of Industry Commerce Agriculture and Fisheries participated in Mid-Term Project Coordination Meeting RLA/5/068: Improving Yield and Commercial Potential of Crops of Economic Importance (ARCAL CL) 11-15 June 2018, Panamá City, Panamá.

**VALUATION OF THE CONTRIBUTION OF THE RLA PROJECT / 5070 TO THE ARCAL PROGRAM**

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| --- | --- | --- |
| ITEM | REFERENCE VALUE | QUANTITY in Euros |
| 1. Experts / Lecturers sent abroad by the Agency (IAEA) | EUR 300 per person per day (travel days included) | 0 |
| 1. Local expenses per regional event venue in the country (Working Group / Training Courses / Workshops / Seminars) | EUR 5,000 per week | 0 |
| 1. 3. Local expenses in national events, which are in the Activity Plan | EUR 3,000 per week | 0 |
| 1. 4. Scholar whose local expenses are assumed by the country | EUR 3,500 per month per scholar | 0 |
| 1. 5. Publications | Up to EUR 3,000 | 0 |
| 1. Creation and / or update of Database | Up to EUR 5,000 | 2000 |
| 1. Sending reagents, radioactive sources, radioisotopes, other materials | Up to EUR 5,000 | 0 |
| 1. Realization of services (eg irradiation of materials) | Up to EUR 5,000 | 0 |
| 1. Time worked as DTM | Maximum EUR 700 per month | 0 |
| Time worked as Project Coordinator | Maximum EUR 500 per month | 0 |
| Time worked as local specialists who collaborate with the project (maximum 3 specialists per project) | Maximum EUR 300 per month per specialist | 10800 |
| Contributions in the execution of each Project including the following points:   * 1. Internal / external per diem   2. Internal / external transport | Maximum EUR 7.500 / project | 2000 |
| Country expenses for the project (infrastructure, equipment, etc.) | Maximum EUR 10,000 | 10000 |
| **TOTAL** | | **24800** |

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

The plan of activities for the 2018-2019 period covering training needs and materials was discussed and elaborated. Among the activities discussed was a training workshop in molecular biology and bioinformatics for the genetic improvement of agricultural crops obtained by inducing mutations and training in participatory selection methodologies in crops of agricultural importance for the region. Additionally, the need for training in gene expression analysis using RNA-Seq technology was agreed upon. Finally, the needs of expert missions in different areas and crops were agreed depending on each applicant country.

**3. RESULTS**

The Scientific Research Council under another IAEA project has initiated work to irradiate another batch if ginger and yam tissue culture plants as no mutant lines with desired traits were identified from the previous batch of irradiated material. Jamaica will not be able to identify by close of IAEA project RLA 5068 any disease tolerant mutant lines of yam or ginger.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

Identifying officers with knowledge of basic Spanish to participate in training events. Officers assigned to Area wide management programme for Frosty Pod Disease. Hence reduction in time committed to the fruit fly surveillance and management programme.

**INTRODUCTION**

**RLA6079:** Using Stable Isotope Techniques for Monitoring and Interventions to Improve Young Child Nutrition (ARCAL CLVI)

The project began in 2018 with the aim of preventing infant malnutrition and risk of developing non-communicable diseases later in life.

The project Counterpart is Dr Asha Badaloo, from the University of the West Indies, Tropical Medicine Research Unit

**1. EXECUTIVE SUMMARY**

The project coordinator in Jamaica attended the first coordination meeting in Cuba, March 5-9, 2018. She presented on the nutritional status of Jamaican children and how the project is relevant to meeting the national development plan. The presentation also included past experiences, existing partners, capacity to conduct the research plus needs and expectations. At the end of the meeting, standardised procedures were determined. In addition, each country created a study plan and list of material needed.

During October 5 -9, 2018, the project co-ordinator and a junior researcher attended a regional training course on stable isotope methodologies, anthropometric techniques and data base management, Guatemala City, Guatemala

resources contributed by the country to the project (include the detailed account as required in the table of financial cash indicators).

Resources will be laboratory facility, research staff including technologists and research nurses, and transportation.

**VALUATION OF THE CONTRIBUTION OF THE RLA PROJECT / 6077 TO THE ARCAL PROGRAM**

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| --- | --- | --- |
| ITEM | REFERENCE VALUE | QUANTITY in Euros |
| 1. Experts/conference attendees sent abroad by the Agency (IAEA) | €300 per person per day (including travel days) | 6300 |
| 1. Local cost of the venues of a regional event held in the country (working group/training courses/workshops/ seminars) | €5000 per week | nil |
| 1. Local costs of national events included in the activity plan | €3000 per week | nil |
| 1. Fellowship holder whose local expenses are borne by the country | €3500 per fellowship holder per month | nil |
| 1. Publications | Up to €3000 | nil? |
| 1. Database establishment and/or updating | Up to €5000 | nil |
| 1. Shipment of reagents/radiation sources/radioisotopes/other material- | Up to €5000 | 4308.82 |
| 1. Services provided (e.g. irradiation of material) | Up to €5000 | nil |
| 1. Time worked as DTM | Maximum €700 per month | nil |
| 1. Time worked as project coordinator | Maximum €500 per month | 6000 |
| 1. Time worked as local specialists collaborating on projects (maximum of 3 specialists per project) | Maximum €300 per month per specialist | 5000 |
| 1. Contributions to the implementation of each project, broken down as:    1. internal/external subsistence    2. internal/external transport | Maximum €7500/project |  |
| 1. Expenditure by the country on the project (infrastructure, equipment, etc.) | Maximum €10 000 | 10000 |
| **TOTAL** | | **31608.82** |

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

So far, training has enhanced expertise and capacity at our research institute in methodology to conduct evidence based research for dissemination. Specifically, the technique will be used to provide data on the body composition of fat and lean tissue in healthy children. Such data which is lacking in the country, will improve assessment of nutritional status by providing a source of reference to be used in the diagnosis of obesity and under-nutrition and for monitoring treatment and intervention to prevent these conditions.

**3. RESULTS**

None.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

No report submitted by project counterpart.

**INTRODUCTION**

**RLA7022:** Strengthening Regional Monitoring and Response for Sustainable Marine and Coastal Environments (ARCAL CXLV)

The project started in 2016 to support improvements of the marine environment management of the countries of Latin America and the Caribbean through actionable information provided by the network for monitoring and response.

**1. EXECUTIVE SUMMARY**

This report details the 2017 achievements of Jamaican participation in ARCAL project RLA7022 “Strengthening Regional Monitoring and Response for Sustainable Marine and Coastal Environments (ARCAL CXLV)”.

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

None yet.

**3. RESULTS**

None yet.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

No report submitted by project counterpart.

**INTRODUCTION**

**RLA7023:** Assessing Atmospheric Aerosol Components in Urban Areas to Improve Air Pollution and Climate Change Management (ARCAL CLIV)

In Latin America and the Caribbean, as in other regions, the scientific knowledge about air quality in megacities is uneven, which represents a clear opportunity for transfer of knowledge, from some urban areas with more experience to others with lower levels of experience. Examples are Santiago in Chile, Sao Paulo in Brazil and Mexico City in Mexico, where due to the adverse geographical conditions and the consequent high levels of contaminants measured, the problem of air pollution has been extensively studied during the last 20 years, while in other cities, capabilities for physicochemical characterization is limited. A regional project will allow not only the possibility to perform regional training activities, but also to create a network of researchers that provide the basis for improving atmospheric studies on a continental scale. Furthermore, the need to identify synergies and co-benefits of taking joint actions to reduce the emissions of greenhouse gases and toxic pollutants in the region was raised in the 19th Meeting of the Forum of Ministers of Environment of Latin America and the Caribbean (held in Los Cabos, Mexico, in March 2014).

**1. EXECUTIVE SUMMARY**

This project aims at enhancing the knowledge about local and regional air particulate matter (APM) pollutants and at generating baseline information for further studies of health impacts and global climate. The study of the chemical, physical, and dynamic properties of the APM in the different cities will be undertaken in an integrated framework of analyses that considers all the processes included from emission sources to sinks, based on observations and modelling. This approach includes: (1) the collection of APM samples and the analysis of their concentration and their major, minor and trace components; (2) the description of aerosol dynamics in each city, including the identification of the local and regional potential sources and their contributions to the total contents measured, through the use of receptor models and the analysis of by-products. The present project design will focus on the harmonization of sampling and measurement approaches between countries; capacity building where required; and a one-year sampling campaign in one city per country. Measurements will be performed and statistical analysis of obtained data will be carried out. Obtained results will be the basis to combine analytical data with remote sensing results to enable modelling of dynamic properties of APM for source identification and pathway reconstruction. Results will then be made publicly available, and transferred to relevant stakeholders of each country, including environmental authorities, national agencies in charge of climate change studies, and to the scientific sector working on environmental health related studies. This proposal is consistent with the needs identified in the Strategic Regional Profile Framework (PER) for the period 2016-2021.

**ASSESSMENT OF THE CONTRIBUTION OF PROJECT RLA/7023\_TO THE ARCAL PROGRAMME**

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| --- | --- | --- |
| ITEM | REFERENCE VALUE | AMOUNT in € |
| 1. Experts/conference attendees sent abroad by the Agency (IAEA) | €300 per person per day (including travel days) | 0 |
| 1. Local cost of the venues of a regional event held in the country (working group/training courses/workshops/ seminars) | €5000 per week | 0 |
| 1. Local costs of national events included in the activity plan | €3000 per week | 0 |
| 1. Fellowship holder whose local expenses are borne by the country | €3500 per fellowship holder per month | 0 |
| 1. Publications | Up to €3000 | 0 |
| 1. Database establishment and/or updating | Up to €5000 | 0 |
| 1. Shipment of reagents/radiation sources/radioisotopes/other material | Up to €5000 | 0 |
| 1. Services provided (e.g. irradiation of material) | Up to €5000 | 0 |
| 1. Time worked as DTM | Maximum €700 per month | 0 |
| 1. Time worked as project coordinator | Maximum €500 per month | 500 |
| 1. Time worked as local specialists collaborating on projects (maximum of 3 specialists per project) | Maximum €300 per month per specialist | 1200 |
| 1. Contributions to the implementation of each project, broken down as:    1. internal/external subsistence    2. internal/external transport | Maximum €7500/project | 0 |
| 1. Expenditure by the country on the project (infrastructure, equipment, etc.) | Maximum €10 000 | 0 |
| **TOTAL** | | **1200** |

**2. IMPACT OF PROJECT ACTIVITIES IN THE COUNTRY**

The only substantive activity that has taken place so far is the attendance of the Regional Training Course on Method Validation and Quality Assurance of Airborne Particulate Matter Analysis using NATs from the 18th to the 26th of October, 2018 by Mr. Johann Antoine. There has also been receipt of the High Volume and Low Volume air quality samplers and associated consumables.

**3. RESULTS**

Sampling is scheduled to commence on April 1st, 2019. Any issues with project implementation would be expected to arise during or as a result of the sampling or analytical phase.

**4. DIFFICULTIES AND PROBLEMS PRESENTED DURING THE PROGRESS OF THE PROJECT:**

No problems reported