PUI PROPOSAL TO SUPPORT ADDITIONAL ACTIVITIES RELATED TO:

"ENHANCING CAPACITY OF NATIONAL MONITORING TEAMS FOR DIAGNOSIS OF EBOLA VIRUS DISEASE (EVD) UNDER HIGH BIO-SAFETY CONDITIONS"

UNDER TC PROJECT RAF/0/042 "*PROMOTING THE SUSTAINABILITY AND NETWORKING OF NATIONAL NUCLEAR INSTITUTIONS FOR DEVELOPMENT*"

Initially Targeted Countries:
Cote d'Ivoire, Guinea[1], Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, South Africa and Uganda.

Countries were selected based on the risk to be affected by the unprecedented Ebola outbreak that is spreading in West Africa. Targeted countries are either EVD-affected countries, bordering EVD-affected countries or at high-risk (e.g. air or road traffic hub for West Africa).

This list of targeted African countries is not exclusive and could be extended to other African countries depending on the evolution of the Ebola situation in the region, upon request and subject to availability of funding.

South Africa (National Institute for Communicable Diseases, NICD) and Uganda (Uganda Virology Research Institute -UVRI and Makerere University) will also participate as resource countries, in particular as partners for the training of monitoring teams on EVD diagnostic under high bio-safety conditions.

Rationale:

The current Ebola outbreak in West Africa is unprecedented in size and spread since the discovery of the Ebola virus disease (EVD) in 1976, and has seriously affected the livelihoods of people and the economies of the affected African countries.

The current outbreak began in Guinea in December 2013 and spread to Liberia and Sierra Leone. However, due to lack of diagnostic means, it was only identified and declared as EVD in March 2014, which led to the infection of a significant number of people in these countries. Few much smaller subsidiary outbreaks have occurred in Nigeria, and Senegal. The World Health Organization (WHO) confirmed that the latter outbreaks have been successfully contained and both countries were declared officially Ebola-free. Infections of medical workers in hospitals in Spain and the United States have also occurred. On 23 October 2014, Mali was declared EVD-affected. As of 7 November 2014, the WHO reported a total of 13,268 cases and 4,960 deaths, of which 311 were health-care workers (data: 4 Nov 2014).

[1] Assistance to non-Member States will be provided in accordance with GOV/2810 and GOV/2818.

Between 9 October and 11 November 2014, the Governments of Cote d'Ivoire, Mali, Liberia, Nigeria, Niger and Sierra Leone have requested the IAEA to support their national capacities in EVD diagnosis.

As EVD is believed to stem from wildlife (fruit bats); the potential background of this outbreak results from incursion of growing human populations into previously isolated environments, bringing people into contact with formerly untouched wildlife populations and their diseases. Experts predict that in the future, outbreaks of 'emerging' zoonotic diseases could be more diverse and more severe than the ones the world has faced so far.

It is uncertain when and where the next outbreak might happen and for how long the current EVD outbreak will continue. Hence, it is crucial for all countries at risk, especially those in Sub-Saharan Africa, to be prepared to detect emerging zoonotic diseases as early as possible, and undertake appropriate response actions.

In light of the above, there is an urgent need to strengthen national and regional capacities with high-quality diagnostic platforms for zoonotic diseases which can be addressed through:
(1)°Training human resources to carry out EVD diagnosis under adequate bio-safety conditions, and
(2)°Provision of needed equipment to perform diagnostic tests under safe conditions.

Through its Technical Cooperation (TC) Programme, the IAEA can contribute to the on-going efforts to address zoonotic disease outbreaks in the Africa region, by helping targeted States to develop or strengthen national and regional capacities and networking in the application of rapid diagnostic techniques like the Reverse Transcription Polymerase Chain Reaction (RT-PCR). Ultimately, this proposal[2] will contribute to enhancing efficient EVD diagnosis in the Africa region and help African countries to prevent or mitigate future zoonotic disease outbreaks, by enabling early detection, faster responses and containment. The proposal builds on previous assistance provided in the region as, within the framework of its TC programme, the IAEA has successfully supported and continues to support the transfer and further application of the RT-PCR technology in Africa.

Project Description

In order to contribute to the needs related to enhancing EVD diagnostic capacities in the African region, this proposal aims at enhancing existing and establishing new small national teams of officially designated virologists and to provide them with high-quality training and the required equipment allowing them to perform diagnosis of emerging zoonotic diseases, including EVD, using the relevant techniques under high bio-safety working conditions.

[2] This proposal is complementing an off-cycle regional TC project that will be submitted to the Board of Governors for approval in March 2015, in line with GOV/INF/2014/22. The off-cycle regional TC project will aim at supporting the building of national and regional capacities and networking for the early, fast and sensitive diagnosis of zoonotic diseases in wild life (a pathogen reservoir) and livestock (possible intermediate reservoir), using ELISA, RT-PCR, and other nuclear-derived techniques (early warning systems). The project will be executed over four years and will target all African countries affected by emerging zoonotic diseases.

As zoonotic diseases are at the frontier between animals and humans and in line with the "One-Health Approach" proposed by the FAO[3], the national teams would be composed ideally of experts from various backgrounds (e.g. veterinarians, medical doctors, molecular biologists, geneticists).

The proposal is designed to be implemented in line with the recommendations and strategies developed by WHO and FAO, and in close cooperation with relevant partner organizations, such as WHO, FAO, the World Organisation for Animal Health (OIE), and Reference Laboratories for EVD such as the South African Reference Laboratory (NICD, Johannesburg), the German Reference Laboratory (Bernhard-Nocht Institute for Tropical Medicine, BNI, Hamburg), and the Ugandan Reference Laboratory (UVRI, Entebbe). In addition, it is expected that the Robert Koch Institute (RKI) in Berlin, Germany, will support the project for reference materials and validation of Ebola diagnostics, and that the Animal Health Research Centre of the National Institute for Agriculture and Nutrition Research and Technology (CISA-INIA) in Madrid, Spain, will host training courses on high bio-safety working conditions.

This initiative will build competence in the region for early detection of emerging zoonotic diseases, which could be used by the respective governments to respond to an emergency through the support of the competent teams, i.e. a regional rapid response mechanism.

In the medium-term, this proposal is expected to complement an off-cycle regional TC project that will aim at strengthening or establishing national early warning systems in order to improve and facilitate national and regional responses to future outbreaks of EVD, as well as other emerging zoonotic diseases. The off-cycle regional project which will be submitted to the March 2015 Board of Governors for approval is expected to start during the spring 2015.

Planned Activities

This proposal aims at supporting national monitoring teams to enable them to perform high-quality diagnosis of zoonotic diseases, including EVD, using RT-PCR under high bio-safety working conditions. It will contribute to building a regional capacity for early detection of emerging zoonotic diseases. The project will concentrate on the following areas:

1. Provision of selected transportable, high bio-safety working environment (bio-containment tents), RT-PCR equipment, reagents, consumables to perform high-quality EVD diagnostic in safe conditions;
2. Training of the officially designated national teams to get acquainted with specific, high bio-safety working conditions, and validation of this capacity by a Reference Laboratory;
3. Training of the officially designated national teams to perform EVD diagnostic in the field, under high bio-safety working conditions;

[3] The "One Health Approach" is defined as a collaborative, international, cross-sectorial, multidisciplinary mechanism to address threats and reduce risks of detrimental infectious diseases at the animal-human-ecosystem interface (FAO).

4. Promotion and strengthening of networking among diagnostic national teams; exchange of information and experiences;
5. Production of high-quality, simple-to-use educational material on bio-safety working conditions applied to EVD diagnostic.

All field activities will be implemented and monitored in close cooperation with UN Mission for Ebola Emergency Response (UNMEER) national Coordinators, WHO Field Coordinators and FAO Coordinators.

Regional training courses and dispatch of IAEA staff and International Experts will be conducted only in Ebola-safe areas.

Activities related to training human resources from Ebola-affected countries will be carried out at the national level with the assistance of experts present locally (e.g. NICD, CDC). Once the current EVD outbreak will be officially declared over, the staff from formerly affected countries will be able to join the regional trainings.

Outcome/Outputs

Outcome:
Improved regional capabilities to respond to emerging zoonotic disease control through operational national monitoring teams that are able to perform high-quality diagnosis of emerging zoonotic diseases including EVD, using RT-PCR under high bio-safety conditions.

Output 1:
Fully-equipped, transportable, high bio-safety working environments (bio-containment tents) are functional (1 unit per participating Country).

Output 2:
National monitoring teams are trained to perform EVD diagnostic in the field in high bio-safety working conditions.

Output 3:
A network of EVD diagnostic teams is established.

Estimated Budget for the project:

Estimated budget Year 1:	€ 2 482 400
Estimated budget Year 2	€ 310 300
Total:	€ 2 792 700

BUDGETARY BREAKDOWN

Year 1	
€ 30 000	First Coordination Meeting to finalize work plan, agree on virologist teams, SOPs, equipment and biosafety for diagnostic tests
€ 10 000	Two one-week duty travels of Technical Officers to lead training courses
€ 20 000	Four one-week international expert missions to lead training courses or assess quality of practices of monitoring teams
€ 100 000	Training on high biosafety working conditions in a biosafety certifying body (Spain; 2 weeks; 25-30 participants)
€ 80 000	Training on high biosafety working conditions in the field (Uganda; 2 weeks; 25-30 participants)
€ 2 050 000	Procurement of bio-containment tents, fully-equipped with RT-PCR, biosafety equipment, reagents and consumables (5000 tests) and accessories (UPS, generator) (11 units)
€ 30 000	Mid-Term Coordination Meeting
€ 162 400	Programme Support Costs (7%)
€ 2 482 400	Year 1 sub-total
Year 2	
€ 10 000	Two one-week duty travels of Technical Officers to lead training courses
€ 20 000	Four one-week international expert missions of to lead training courses or assess quality of practices of monitoring teams
€ 80 000	Training on EVD diagnosis in high biosafety working conditions (South Africa; 2 weeks; 25-30 participants)
€ 80 000	Training on wildlife sampling and monitoring for EVD diagnosis in high biosafety working conditions (South Africa; 2 weeks; 25-30 participants)
€ 70 000	Meeting Workshop on networking for emerging zoonotic diseases early warning strategy (1 week; 40 participants)
€ 30 000	Final Coordination Meeting
€ 20 300	Programme Support Costs (7%)
€ 310 300	Year 2 sub-total
€ 2 792 700	**TOTAL**