ANNEX II: TERMS OF REFERENCE

PROJECT TITLE: STRENGTHENING CLIMATE RESILIENT HEALTH SYSTEMS IN THE CARIBBEAN

FINANCED UNDER THE EUROPEAN DEVELOPMENT FUND

CONSULTANCY TO DEVELOP, DESIGN AND IMPLEMENT CLIMATE INTEGRATED EARLY WARNING SYSTEMS IN THE CARIBBEAN

1. BACKGROUND INFORMATION

1.1 Partner country

Sixteen (16) CARIFORUM countries listed as follows: Antigua and Barbuda, Bahamas, Barbados, Belize, Cuba, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, St Lucia, St Vincent and the Grenadines, St Kitts and Nevis, Suriname, Trinidad and Tobago.

1.2 Contracting Authority

Caribbean Public Health Agency (CARPHA)

1.3 Country background

CARPHA was legally established in July 2011 by an Inter-governmental Agreement (IGA) signed by Heads of Caribbean Governments and began operations in January 2013. CARPHA's functions encompass the responsibilities of five (5) previously existing regional health institutions. Work in these areas advances the public health agenda in the Region and makes a valuable and coordinated contribution to the knowledge and resources of the international health community.

Currently, among CARPHA's top regional public health priorities is the reduction of the impact of climate change on health systems in the Caribbean. Health systems remain highly vulnerable to impacts from climate change (as a relatively new threat) both on the quality and the capacity of services themselves, as well as on the socio-economic and environmental determinants of health. These impacts have been well documented: extreme weather conditions; heat waves; more frequent strong and devastating hurricanes affecting many countries with long lasting impacts (Maria, Irma, 2017); recurring and extending periods of droughts and followed by excessive rainfall (Christmas Floods St. Lucia St. Vincent, 2013); and sea level rise. These conditions negatively affect food security, water security, and have direct negative impact on people's health and wellbeing in the form of heat strokes, respiratory illnesses (chronic and acute), cardiovascular diseases, malaria, Zika, dengue fever and many other vector borne and infectious diseases. Also negatively affected will be national socio-economic development aspects like workers' health (lost work capacity and reduced labour productivity in vulnerable populations and migration) as well as the attainment of the United Nation Sustainable Development Goals.

1.4 Current situation in the sector

The Caribbean continues to experience the effects of climate change. This includes an increase in the frequency of extreme weather and climate events, such as major hurricanes and associated storm surges, salinity of drinking water due to rising sea levels and increased frequency and intensity of droughts, excessive sargassum (seaweed) deposits on beaches that diminish the tourism product, decreased habitable and agricultural land area, disrupted fisheries, and diminished food security. The increased frequency of extreme weather and climate events has in turn led to increases in disease (such as through the proliferation of pest and disease vectors), morbidity and damage to health and other infrastructure. The region's limited infrastructure and socioeconomic resources leave it at least partly reliant on foreign aid for climate mitigation and preparedness efforts. The economies of most Caribbean countries and the health of its population are extremely vulnerable to the impacts of climate change. Changing rainfall patterns impact heavily on agricultural production. Extreme weather conditions have destroyed years of development and infrastructural progress development and reduced countries' GDP.

Caribbean Small Island Developing States (SIDS) are economically vulnerable, as the sectors on which they rely heavily for subsistence or revenue-such as fishing, agriculture and tourism-are highly sensitive to climate change. The Caribbean is ranked first out of 13 regions in terms of the contribution of the tourism industry to the regional economy, making it a strategic sector for the Caribbean economy. Being highly dependent on a few sectors combined with the uncertainties inherent in the changes to climate makes this region exceptionally vulnerable to environmental threats and natural hazards.

1.5 Related programmes and other donor activities

Other complementary initiatives currently led and managed by CARPHA in furtherance of this public health mandate include:

- 11th European Development Fund Zika and other Mosquito Borne diseases – Strengthening of surveillance systems in country for vector borne diseases.
- CIF/ Inter-American Development Bank Pilot project for Climate Resilience (PPCR).

2. OBJECTIVE, PURPOSE & EXPECTED RESULTS

2.1 Overall objective

The overall objective of the project of which this contract will be a part is as follows:

Contribute to reduced mortality and morbidity from expected health consequences of climate change (CC) in Caribbean countries.

2.2 Purpose

The purpose of the contract is as follows:

To improve surveillance capacity of professionals working in the health sector and health-determining sectors

More specifically, a Consultant will be contracted to develop and pilot an early warning surveillance system (EWS) integrating climate variability for select climate sensitive diseases in 3 CARIFORUM countries in order to support public health planning.

2.3 Results to be achieved by the Contractor:

The contractor is expected to deliver the following results:

- **Result 1**: Inception Report, including a detailed Workplan, developed and submitted for approval of the Project Manager.

- **Result 2:** Feasibility study report for the development and implementation of EWS for climate sensitive diseases in 3 CARIFORUM countries

- **Result 3:** Climate integrated, early warning systems designed, developed and tested for select climate sensitive diseases in three (3) CARIFORUM countries

- **Result 4**: Training on the utilisation and maintenance of climate integrated EWS designed and delivered to the three (3) CARIFORUM countries

- **Result 5:** Draft Final Report developed and submitted in accordance with the reporting requirements in Section 7.1 of these Terms of Reference

- **Result 6:** Final Report submitted and approved in accordance with the reporting requirements in section 7.1 of these Terms of Reference.

3. ASSUMPTIONS & RISKS

3.1 Assumptions underlying the project

The assumptions associated with this contract as outlined in the Logical Framework are:

- Commitment by key stakeholders/existing international development partners to continue to support CARPHA.

3.2 Risks

- Changes in economic, social and political conditions as well as other exogenous shocks which may create difficulties for the achievement of the objectives of the project.

- The occurrence of major man-made or natural disasters which can change public health priorities and inhibit the implementation of this project.

4. SCOPE OF THE WORK

4.1 General

4.1.1. Description of the Assignment

The Contractor will be tasked with the design, development and pilot of early warning systems for select climate sensitive diseases in 3 CARIFORUM countries. National and regional stakeholder consultations will inform the specific EWS to be implemented in each country. The systems will be tailored for ease of scale up, maintenance and future sustainability.

4.1.2. Geographical area to be covered

Three (3) CARIFORUM countries will participate in this Project. These may be selected from the list below:

- Grenada
- St. Lucia
- St. Vincent and the Grenadines
- Barbados
- Jamaica
- Belize
- Trinidad and Tobago

The three (3) countries will be identified by CARPHA, by or before the beginning of the contract.

4.13 Target groups

Public health professionals working in surveillance, health response and planning.

4.2 Specific Work

The project will include the specific work tasks:

RESULT 1: Inception Report, including a detailed Workplan, developed and submitted for approval of the Project Manager.

1.1 Engage in an initial briefing with the designated Project Manager and other relevant CARPHA personnel to discuss the scope of the work to be undertaken, the methodology, approach and any other issues pertaining to the Project upon the commencement of the Consultancy.

1.2 Engage in an initial briefing with the designated focal point in each of the three (3) CARIFORUM countries to discuss the scope of the Project.

1.3 Prepare and submit for the approval of the Project Manager, an Inception Report which includes the timelines for the specific project activities and the methodology for the activities.

RESULT 2: Feasibility study report for the development and implementation of EWS for climate sensitive diseases in 3 CARIFORUM countries

2.1 Adapt currently available surveillance assessment tools and produce a final baseline assessment tool to conduct the feasibility study.

2.2 Liaise with the Ministries of Health and other identified stakeholders in each of 3 CARIFORUM countries to determine surveillance system design, functioning and the quantity and quality of information available to perform the works described in RESULT 3.

2.3 Carry out assessment of national surveillance systems in three (3) CARIFORUM countries inclusive of epidemiological, laboratory, and environmental health/vector monitoring and review climate data management and early warning products of meteorological and hydrological services

2.4 Produce a feasibility study report based on the assessments conducted in 3 CARIFORUM countries, including a preliminary plan for design and pilot of the EWS in country.

Result 3: Climate integrated, early warning systems designed, developed and tested for select climate sensitive diseases in three (3) CARIFORUM countries

3.1 Following regional stakeholder consultations, develop an approved stakeholder action plan for the three CARIFORUM countries outlining an integrated climate sensitive, disease surveillance system including options for sustainability.

3.2 Design and develop a database for at least 10 years' worth of available disease, climatic and entomological surveillance data for each of the 3 pilot countries, as well as, predetermined country-specific subdivisions.

3.3 Perform data cleaning of the epidemiological, climatic/environmental and entomological indices data[1]

3.4 Develop spatial-temporal model(s) that accurately captures the relationships among epidemiological, climatic data, and entomological indices data[2]

3.5 Validate the spatial-temporal model(s) ability to assess the risk of disease outbreaks or occurrences for each country.

3.6 Produce disease-related GIS vulnerability maps for identified diseases/conditions in each of the three (3) countries.

3.7 Determine the level of risk of disease outbreaks given the current climatic, entomological and epidemiological data.

3.8 Host database and models on an inter-operable open-source platform and develop IT plan for maintenance and upgrade of platform

3.9 Implementation report of system design, development and test in each of 3 CARIFORUM countries

3.10 Develop a preliminary monitoring and evaluation plan for the EWS in conjunction with the CARPHA monitoring and evaluation team

RESULT 4: Training on the utilisation and maintenance of climate integrated EWS designed and delivered to the three (3) CARIFORUM countries

4.1 Develop online modular training (using CARPHA moodle LMS) in the use of the surveillance system, data modelling and analysis (production of system outputs) and system maintenance taking into account IT and other considerations for continued sustainability.

4.2 Carry out training for national stakeholders in each of 3 CARIFORUM countries using the materials developed under 4.1.

4.3 Deliver a final in-country training workshop (for each of 3 CARIFORUM countries) in the use of the surveillance system, data modelling and analysis

[1] Entomological data will be used if the selected, climate sensitive disease for that CARIFORUM country is a mosquito borne disease.

[2] Entomological data will be used if the selected, climate sensitive disease for that CARIFORUM country is a mosquito borne disease.

Result 5: Draft Final Report developed and submitted in accordance with the reporting requirements in Section 7.1 of these Terms of Reference

Result 6: Final Report submitted and approved in accordance with the reporting requirements in section 7.1 of these Terms of Reference.

The contractor must also comply with the latest Communication and Visibility Manual for EU External Actions concerning acknowledgement of EU financing of the project. (See https://ec.europa.eu/europeaid/communication-and-visibility-manual-eu-external-actions_en

4.3 Project management

4.3.1 Responsible body

The Surveillance Disease Prevention and Control Division of CARPHA will be responsible for the management and coordination of the Project

4.3.2 Management structure

Project management organisation will consist of the following structures:

The Head, Vector Borne Diseases, CARPHA, CARPHA, will be the Project Manager and will have overall responsibility for the Project. The Project Manager will retain oversight for the consultancy and will also be responsible for the day-to-day supervision of project activity.

The Head, Environmental Health and Sustainable Development (EHSD) at CARPHA, will provide technical advice as well as comments on the deliverables of the Consultant.

The Project Manager shall be responsible for approving all reports.

4.3.3 Facilities to be provided by the Contracting Authority and/or other parties

CARPHA shall:

i. Identify, by or before the beginning of the contract, the three (3) countries in which the EWS will be implemented;

ii. Notify each of the three (3) participating countries about the execution of the Project;

iii. Coordinate with the Ministry of Health in each CMS, the identification of a focal point for the Project and advise of the specific functions to be carried out by the focal point;

iv. Introduce the Consultant to the relevant Ministry of Health and other officials in the participating Member States;

v. Provide the Contractor with the existing surveillance assessment tools and other relevant documents produced by CARPHA that may be required for the execution of the Project;

vi. Assume responsibility for the logistical arrangements for the training workshops to be delivered by the Contractor under the Contract.

5 LOGISTICS AND TIMING

5.1 Location

The operational base for the project is the Federation Park, Port of Spain campus of CARPHA.

5.2 Start date & Period of implementation of tasks

The intended start date is May/June 2021 and the period of implementation of the contract will be twenty-four (24) months from this date.

6 REQUIREMENTS

6.1 Staff

Note that civil servants and other staff of the public administration of the partner country, or of international/regional organisations based in the country, shall only be approved to work as experts if well justified. The justification should be submitted with the tender and shall include information on the added value the expert will bring as well as proof that the expert is seconded or on personal leave.

6.1.1. Key experts

All experts who have a crucial role in implementing the contract are referred to as key experts. The expected profiles of the key experts for this contract are as follows:

Key expert 1: Team Leader

Qualifications and Skills

- At least a Master's in Public Health or Epidemiology or Infectious Diseases; Project management training

General Professional Experience

- At least 10' years communicable disease surveillance and outbreak management experience in climate sensitive diseases, such as, respiratory diseases, vector borne diseases, food, water borne diseases
- Experience working in the Caribbean or other similar territories
- Fluency in English written and verbal
- Be independent and free from conflicts of interest in the responsibilities that are taken on in this consultancy

Specific Professional Experience

- At least 5 years' experience in developing and implementing disease surveillance and early warning systems
- Experience with database design, management, data analysis and use of electronic based data capture and web reporting tools

Key Expert 2: Geoinformatics Expert

Qualifications and Skills

- At least a Master's in Geoinformatics or a related field

General Professional Experience

- At least 5 years' experience working in public health disease modelling.
- Experience working in the Caribbean or other similar territories
- Fluency in English written and verbal
- Be independent and free from conflicts of interest in the responsibilities that are taken on in this consultancy

Specific Professional Experience

- At least 3 years' experience in conducting statistical modelling of health phenomena for climate sensitive diseases
- Experience in designing databases
- Experience producing Geographic Information Systems (GIS) based health status maps

Key Expert 3: Environmental Health/Vector Control/Entomological Expert

Qualifications and Skills

- At least a Master's in Biology with a specialisation in Environmental Biology/Management or similar field

General Professional Experience

- At least 8 years' experience working in environmental health and the prevention and control of vector borne diseases
- Experience working in the Caribbean or other similar territories
- Fluency in English written and verbal
- Be independent and free from conflicts of interest in the responsibilities that are taken on in this consultancy

Specific Professional Experience

- At least 5 years' experience conducting entomological surveillance including use of GIS applications
- Experience in management and analysis of entomological data

Key Expert 4: Information Technology Expert

Qualifications and Skills

- At least a Masters in Computer Science or Information Technology

General Professional Experience

- At least 5 years experience working with online database and systems design
- Experience working in the Caribbean or other similar territories
- Fluency in English written and verbal
- Be independent and free from conflicts of interest in the responsibilities that are taken on in this consultancy

Specific Professional Experience

- Data base programmer with at least 3 years' experience working within a PostgreSQL environment
- PostgreSQL database administration experience
- Experience working with open-source platforms similar to District Health Information System (DHIS) 2.

All experts must be independent and free from conflicts of interest in the responsibilities they take on

6.1.2. Other experts, support staff & backstopping

CVs for experts other than the key experts should not be submitted in the tender but the tenderer will have to demonstrate in their offer that they have access to experts with the required profiles. The Contractor shall select and hire other experts as required according to the needs. The selection procedures used by the Contractor to select these other experts shall be transparent, and shall be based on pre-defined criteria, including professional qualifications, language skills and work experience.

The costs for backstopping and support staff, as needed, are considered to be included in the tenderer's financial offer.

6.2 Office accommodation

Office accommodation for each expert working on the contract is to be provided by the contractor.

6.3 Facilities to be provided by the Contractor

The contractor shall ensure that experts are adequately supported and equipped. In particular it must ensure that there is sufficient administrative, secretarial and interpreting provision to enable experts to concentrate on their primary responsibilities. It must also transfer funds as necessary to support their work under the contract and to ensure that its employees are paid regularly and in a timely fashion.

The Contractor shall be required to provide his/her personal computer (e.g. laptop or tablet) and Internet connectivity for use during this project.

6.4 Equipment

No equipment is to be purchased on behalf of the Contracting Authority / partner country as part of this service contract or transferred to the Contracting Authority / partner country at the end of this contract.

Any equipment related to this contract which is to be acquired by the partner country must be purchased by means of a separate supply tender procedure.

7. REPORTS

7.1 Reporting requirements

The Contractor will submit the following in English in one original and one e-copy:

- **Inception Report** of maximum 12 pages to be produced after **two (2) weeks** from the start of implementation. In the report the Contractor shall describe e.g. initial findings, progress in collecting data, any difficulties encountered or expected in addition to the work programme and staff travel. The Contractor should proceed with his/her work unless the Contracting Authority sends comments on the inception report.

- **Interim Report No.1/Feasibility study report** of maximum 20 pages to be produced **two (2) weeks** after the termination of country assessments. In the report the Contractor shall describe e.g. initial findings, progress in collecting data, any difficulties encountered or expected in addition to the work programme and staff travel. The report will include a preliminary plan for implementation of the EWS in each of the 3 CARIFORUM countries.

- **Interim Report No.2** of maximum 25 pages shall be submitted no later than **one (1) month** after conclusion of the development and test of the pilot EWS in the last of 3 CARIFORUM countries. In the report the Contractor shall describe e.g. initial findings, progress in collecting data, any difficulties encountered or expected in addition to the work programme, staff travel and future recommendations.

- **Interim Report No.3** of maximum 15 pages shall be submitted no later than **ten (10) working days** after conclusion training on the EWS in the last of 3 CARIFORUM countries. In the report the Contractor shall describe e.g. initial findings, progress in collecting data, any difficulties encountered

- **Draft final report** of maximum 20 pages (main text, including annexes). This report shall be submitted no later than **one month** before the end of the period of implementation of tasks. The submission must be a comprehensive report comprising the work conducted in respect of section 4.2.

- **Final report** with the same specifications as the draft final report, incorporating any comments received from the parties on the draft report. The deadline for sending the final report is **ten (10) working days** after receipt of comments on the draft final report. The report shall contain a sufficiently detailed description of the different options to support an informed decision on the products. The detailed analyses underpinning the recommendations will be presented in annexes to the main report. The final report must be provided along with the corresponding invoice.

7.2 Submission and approval of reports

The report referred to above must be submitted to the Project Manager identified in the contract. The Project Manager is responsible for approving the reports.

8. MONITORING AND EVALUATION

8.1 Definition of indicators

- Climate integrated, early warning systems designed, developed for 3 CARIFORUM countries
- National stakeholders in the three CARIFORUM countries trained in use and maintenance of EWS
- Compliance with the schedule for the submission of reports on the outputs of the Project as outlined in Section 7.1.

8.2 Special requirements

No special requirements.