United Nations Industrial Development Organization

TERMS OF REFERENCE (TOR)

TECHNICAL ASSISTANCE FOR RESILIENCE TO CLIMATE VARIABILITY IN THE BUILDING SECTOR OF ANTIGUA AND BARBUDA CTCN REFERENCE NUMBER: 2017000037

1 BACKGROUND INFORMATION

The Climate Technology Centre and Network (CTCN) is the operational arm of the United Nations Framework Convention on Climate Change (UNFCCC) Technology Mechanism and hosted by the United Nations Environment (UN Environment) in collaboration with the United Nations Industrial Development Organization (UNIDO) and supported by 11 partner institutions with expertise in climate technologies. The mission of the CTCN is to promote accelerated deployment and transfer of climate technologies at the request of developing countries for energy-efficient, low-carbon and climate-resilient development.

These requests for Technical Assistance (TA) are being submitted to the CTCN by the National Designated Entity (NDE) of the respective country. The scope of services under these Terms of Reference shall be executed based on a restricted solicitation process. By mandate, only accepted Members of the CTC Network are eligible to submit proposals and execute the required services to implement the response. Should the bidder partner with another institution to deliver a minor part of the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.

In case you are not a CTC Network member yet, you may bid for implementation of the technical assistance, subject to the condition that you submit your completed application for CTC Network membership before the bid closure and the same is acknowledged by the CTCN. Furthermore, the contract award – should your bid be selected – is conditional to your network membership application having been successfully approved by the Director of CTCN. Should the bidder partner with another institution to deliver the services described in these Terms of Reference, it is expected that the partner institution also joins the CTC Network.

The maximum budget for this contract is USD 53,750.

2 PROJECT CONTEXT

Hurricanes, floods and droughts are becoming increasingly destructive in Antigua and Barbuda. The recent hurricane Irma left behind three casualties, 1,800 evacuated inhabitants and 95 per cent of Barbuda's buildings and infrastructure damaged or destroyed.

It is crucial that Antigua and Barbuda manages the reconstruction of key public buildings by “building back better”, ensuring that critical public service buildings and emergency services can withstand major local disasters. Antigua and Barbuda is seeking to avoid major destruction, during potential future climate-induced disasters. In order to lead a sustainable reconstruction process that reflects projected climate change impacts, Antigua and Barbuda needs support with assessments and recommendations

Rfx No. 7000002884
28 March 2018

related to adaptation of infrastructure, disaster resilience of building structures, and availability of key services during and post-emergency situations.

The following are important for sustainable reconstruction and disaster resilience:

Ensuring service provision pre, during, and post-emergency situations: Key public facilities such as hospitals, police stations, medical centers, fire stations, defense force facilities and other public facilities should be fully prepared for climate-inducted disasters such as hurricanes, floods and droughts and should stay operational during disaster events, ensuring their services are readily available so that the people and economy can get back up and running with minimal losses. On one hand it is important to ensure that the key official buildings' structures are disaster resistant and can continue hosting key operations. On the other hand the buildings' service inputs such as food, water and electricity need to be sufficient pre- during and post-disaster events.

Hurricane wind resistant building structures: In general, damage due to wind forces is greater at higher elevations on a structure. Typical damages due to high winds include missing or damaged roofing and sides of a building and removal of building materials and covering in walls and roof.

Earthquake resistant building structures: Antigua and Barbuda are in a seismically active region. Hence it is important that every opportunity be taken to cost-effectively upgrade the earthquake resistance of public buildings. As an absolute minimum, seismic risk should always be considered in the design, planning and implementation of all building works. This can be done along with broader resilience planning at minimal incremental cost.

Flood protection for building structures: In general, damage due to the storm surges caused by hurricanes will be greater at lower elevations on a structure. Typical damages caused by storm surges include water damages, due to flooding, displaced or demolished structures and scouring or undermining of foundations. Additionally, inland flooding also increases.

Energy efficiency: The energy needs of public facilities are strongly influenced by the efficiency of energy use. The industry standard approach to energy investments is to first invest in efficiency to reduce the peak and average energy demands. This in turn reduces both energy capital and operating budgets. For the buildings under consideration, the efficiency infrastructure investments can be divided into three broad groups: building (insulation, windows, doors), lighting, and equipment (principally air conditioners). In addition, the embodied energy of the new public facilities should be kept low. The embodied energy can be decreased by using durable building materials and building materials that require small amounts of energy to produce. Also, the transportation kilometers needed to bring building materials to the construction site increase the embodied energy of buildings.

Improving the resilience of buildings in Antigua and Barbuda, represents one of the key priority adaptation actions presented in Antigua and Barbuda NDC (2015). Specifically, the NDC states that 'By

2030, all buidings are improved and prepared for extreme climate events, including drought, flooding and hurricanes´.

Further to the above, the Ministry of Health and Environment has requested CTCN technical assistance with the aim of supporting in the emergency response and urban adaptation related to the reconstruction of critical service buildings and their emergency services in the aftermath of the hurricane Irma.

The result of this TA will be used to prepare a full scale GCF proposal that aims to increase the resilience of the population in Antigua and Barbuda to extreme climate events. The proposed GCF project will implement climate resilient technologies and interventions in public and community buildings and will strengthen institutional, technical and financial capacity within the GoAB to enable climate resilient building development in the long term.

3 AIM OF THE CONTRACT

The technical assistance includes technical assessments of the structural damage of selected public buildings. In addition, the technical assistance aims to develop a costed implementation plan for adaptation of selected public utility facilities.

The following activities to be undertaken are:

- Development of a generic work scope, method statements and quality standards for increased structural resilience of up to 30 municipal buildings for insertion into bid documents;
- Development of up to 30 detailed work packages consisting of a works list and a basic site plan for insertion into bid documents;
- Development of engineering cost estimates for each work package and converting these into unit rates and costing rules of thumb;
- Preparation of basic drawings for the parts of the buildings that will be worked on;
- Building the capacity of the national workforce to apply the work packages to other municipal buildings through practical experience under expert guidance for the up to 30 buildings included in the Techncial Assistance;
- Remote advice during the procurement and implementation works;
- Monitoring and communication.

The expected outputs are:

- Detailed work plan developed;
- Monitoring and evaluation plan developed;
- CTCN Impact Description developed;
- Closure and Data Collection report prepared;

- A draft bid package (Employer Requirements section only) covering the generic work scope, method statements and quality standards developed;
- Standard structural drawings covering only the matters to be addressed prepared;
- Training guidance and material on structural inspections and works estimations given to the local employees;
- Structural inspection and work estimation reports for up to 30 buildings developed;
- Technical advice notes for the 2018 procurement and implementation activities prepared.

The outputs are in line with the country's NDC and will feed into its adaptation readiness strategy. Specifically, the TA will enable the counterparts from Antigua and Barbuda to identify most relevant adaptive measures for the climate resiliency of public buildings in Antigua and Barbuda. The outputs shall be used by the authorities in Antigua and Barbuda for insertion into bid documents; as guidance for further funding proposals, investment plans, and for future design and structural specifications of public buildings; for policy and strategic development; implementation of reconstruction of public buidlings in Antigua and Barbuda; and for monitoring and operations.

4 SCOPE AND ACTIVITIES OF THE PROPOSED CONTRACTED SERVICES

Once the Contractor is contracted, the CTCN will organize a kick-off implementation call between all parties involved to introduce the Contractor to the Antigua and Barbuda NDE, present the activities, timeline and clarify the roles and responsibilities.

To ensure a successful implementation and proper interaction with national counterparts and stakeholders, it is recommended that enough days be allocated on site for most of the relevant activities. It is also recommended to include regional, or preferably, national experts or organisations in the proposed implementation team.

It is mandatory for the Contractor(s) to allocate at least 1% of the budget to integrate a gender mainstreaming approach to the activities. Please refer to the CTCN Gender Mainstreaming Tool for Response Plan Development for guidance at https://www.ctc-n.org/technologies/ctcn-gender-mainstreaming-tool-response-plan-development

Output 1: Development of implementation planning and communication documents
Activity 1: i) A detailed work plan of all activities, deliveries, outputs, deadlines and responsible persons/organisations and detailed budget to implement the Response Plan. The detailed work plan and budget must be based directly on this Response Plan; ii) Based on the work plan, a monitoring and evaluation plan with specific, measurable, achievable, relevant, and time-bound indicators used to monitor and evaluate the timeliness and appropriateness of the implementation. The monitoring and evaluation plan should apply selected indicators from the Closure and Data Collection report template and enable the lead implementer to complete the CTCN Closure and Data collection report at the end of the assignment (please refer to item iv below and section 14 in the Response Plan); iii) A two-page CTCN Impact Description formulated in the beginning of the technical assistance and

update/revised once the technical assistance is fully delivered (a template will be provided); iv) A Closure and Data Collection report completed at the end of the technical assistance (a template will be provided).
Iiv) Delivery impact assessment report with indicators. This report should clearly outline numeric indicators of most relevant intended impacts before and after delivering the outputs.

Output 2: Structural works preparation for up to 30 buildings and implementation troubleshooting

Activity2.1. General works preparation

The two goals of the works preparation phase are to a) set up the structural programme for procurement and implementation and b) build the capacity of the national workforce through practical experience under expert guidance. This phase will entail joint work between the Implementer team (anticipated to consist of a senior structural engineering consultant and a local junior civil engineer) and Antigua and Barbuda government engineers and technicians.

The desired detailed endpoints for this phase are:

- The generic work scope, method statements and quality standards for increased structural resilience have been developed for insertion into bid documents.
- Up to 30 detailed work packages consisting of a works list and a basic site plan have been developed for insertion into bid documents.
- Engineering cost estimates have been developed for each work package and converted into unit rates and costing rules of thumb.
- The Antigua and Barbuda government has used the above inputs in funding proposals and in project plans and procurement documentation.
- Local engineers and technicians have increased their technical capacity and practical experience.

The list of the targeted buildings for detailed work package development is as follows:

- Hannah Thomas Hospital, Barbuda
- Police Office, Barbuda
- Fire Station, Barbuda
- Mount St John's Medical Centre (MSJMC), Antigua
- Royal Police Force of Antigua and Barbuda (RPFAB) Headquarters, Antigua
- St John's Fire Station, Antigua
- All Saints Clinic, (part of the All saints complex), Antigua
- All Saints Fire Station, (part of the All saints complex), Antigua
- All Saints Complex Police Station, (part of the All saints complex), Antigua
- Royal Antigua & Barbuda Defence Force, Antigua
- Clarevue Psychiatric Hospital, Antigua
- Fiennes Institute, Antigua
- National Office of Disaster Services (NODS), Antigua
- Department of Environment Office, Antigua
- Meteorological Office, Antigua
- Antigua State College, Antigua
- Her Majesty's Prison, Antigua

- Bendals Clinic, Antigua
- Bolans Clinic, Antigua
- Fiennes Institute, Antigua
- Good Shepherd Home for Children, Antigua
- Holberton Hospital - Childrens Ward, Antigua
- Holberton Hospital – Hospice, Antigua
- Nyahbinghi Theocracy School, Antigua
- Old Road Clinic, Antigua
- Parham Clinic, Antigua
- Potters Clinic, Antigua
- Swetes Clinic, Antigua
- Victory Centre, Antigua
- Willikies Clinic, Antigua

The implementer shall undertake an initial mission to meet with key stakeholders and inspect a representative sample amongst the 30 buildings. From that visit the following items will be developed;

- A draft bid package (Employer Requirements section only) covering the generic work scope, method statements and quality standards.
- A guidance note for the local team for the data collection, detailed work assessment and cost estimation for up to 30 buildings.

Activity 2.2: Local capacity building, site inspections and site work package development

The implementer shall undertake a second mission to further develop the work packages. Visit activities will include:

- Consultation on the draft bid package.
- On-site training of the local engineer and the Antigua and Barbuda government team for site inspections and development of the 30 work packages.
- Accompaniment of the local teams as they progress the first inspections and development work.
- Preparation of basic drawings for the parts of the buildings that will be worked on.

The local junior civil engineer will be responsible for the detailed inspection of all 30 facilities and compilation of the draft work packages. Thereafter the senior engineer shall remotely review and edit the work packages once they are drafted.

Activity 2.3 Implementation troubleshooting

The implementer will remain on call in 2018 for remote advice during the procurement and implementation works.

Deliverables – Output 2:

i. A draft bid package (Employer Requirements section only) covering the generic work scope, method statements and quality standards.
ii. A guidance note for the data collection, detailed work assessment and cost estimation.

iii.	Up to 30 detailed work packages consisting of a works list, a basic site plan and engineering cost estimates for each work package, converted into unit rates and costing rules of thumb.
iv.	Standard structural drawings covering only the matters to be addressed.
v.	On-site training, training guidance and material on structural inspections and works estimations.
vi.	Technical advice notes for the 2018 procurement and implementation activities.

5 GENERAL TIME SCHEDULE

The activities under this Contract should be completed within a period of 9 weeks from the date of signature of the Contract for the implementation of outputs 1-2.

6 PERSONNEL IN THE FIELD (PROFESSIONAL EXPERIENCE AND QUALIFICATIONS)

The Contractor is expected to provide the services of a team that should ideally comprise the following competencies:

- Proven expertise in structural engineering of public buildings;
- Proven expertise damage assessment of disaster damage of public buildings;
- Proven expertise in hurricane, flood and earthquake resistant structures;
- Proven expertise in building energy efficiency;
- Proven expertise in adaptation projects in tropical climate zones/small island states, preferably in Antigua and Barbuda or similar environment;
- Demonstrated experience in designing and delivering training for stakeholders to enhance climate change adaptation;
- Excellent written and communication skills in English.

The CVs of the respective experts assigned to this project by the Contractor must be provided.

7 LANGUAGE REQUIREMENTS

The working language for the purposes of this project is English, thus an excellent command of English is required of the proposed personnel.

All delivered documents must be of such a quality that no further editing shall be required.

8 DELIVERABLES AND SCHEDULE

Activities (Brief description)	Weekly implementation plan of activities									
	Anticipated Duration: 9 weeks	1	2	3	4	5	6	7	8	9
Activity 1 - Development of implementation planning and communication documents										

Deliverables									
Detailed work plan.									
Monitoring and evaluation plan.									
CTCN Impact Description.									
Closure and Data Collection report.									
Delivery impact assessment report with indicators.									
Activity 2: Structural works preparation for up to 30 buildings and implementation troubleshooting Activity 2.1. General works preparation Activity 2.2: Local capacity building, site inspections and site work package development Activity 3.3 Implementation troubleshooting			*	*					
Deliverables									
A draft bid package (Employer Requirements section only) covering the generic work scope, method statements and quality standards .			*	*					
Training guidance and material on structural inspections and works estimations.									
On-site training, structural inspection, work estimation and engineering cost estimate reports for up to 30 buildings (developed by the local engineer and reviewed by the implementer).									
Standard structural drawings covering only the matters to be addressed.									
Technical advice notes for the 2018 procurement and implementation activities.									

* 2 weeks assigned for the local team for data collection and preparations

9 ADDITIONAL INFORMATION

During missions, the contractor will be accompanied by focal points from Antigua and Barbuda (i.e. Technology executive committee) as an on-the job-training. The government of Antigua and Barbuda can support the implementer by providing: (i) local transportation for the expert (and local trainees i.e. TEC), (ii) a meeting room (iii) office space for the implementer during her/his mission, (iv) gis data, maps, drawings pictures and other relevant information, and (v) support from a social and gender expert.