**Terms of Reference**

**Disaster Preparedness Modeling Consultant**

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| **I. Assignment Information** |
| **Title:** **Disaster Preparedness Modeling Consultant (Individual Contractor - IC)**  Providing the Building Damage Assessment team with technical assistance in the development of the Building Damage Assessment tool, including but not limited to preparedness forecast.  **Duty Station:** UNDP Barbados & the OECS sub-regional office.  **Starting Date**: 23 September 2019  **Duration of the consultancy:** 2.5 months |
| **II. Background** |
| The 2017 Hurricanes season in the Caribbean was particularly active. Hurricanes Irma and Maria impacted multiple islands within a week causing massive devastation and triggering a crisis that almost two years later is still affecting many communities impacted.  In this context, the United Nation Development Programme (UNDP) Barbados & the OECS sub-regional office and the UNDP Crisis Bureau in HQ designed a tool to rapidly assess damage to buildings in post-disaster contexts (immediately after natural disasters). The [Building Damage Assessment (BDA) Toolkit](https://www.undp.org/content/buildingdamageassessment/en/home/) is designed to support national and local authorities in crisis-affected countries around the world to assess residential and non-residential infrastructures and collect timely data to make informed decisions and prioritization for risk-informed rehabilitation and rebuilding.  The BDA Toolkit is operated using a flexible online questionnaire that gathers information about buildings, including damage to the structure, vulnerability of the occupants, etc. The information is collected on the field through smartphones using [KoboToolbox](https://kobo.humanitarianresponse.info/accounts/login/?next=/#/forms) (an opensource data collection platform that allows rapid information gathering and facilitates the post-collection data analysis). After the data is collected in the field and uploaded to KoboToolbox, it is cleaned and visualized into [Microsoft Power BI](https://powerbi.microsoft.com/es-es/) (an intelligence platform for the analysis and real-time visualization of data and interactive maps). Once this process is completed, the information is handed over from UNDP to the government of the affected area. Governments can use this powerful data for rapid reconstruction, policy-making and preparedness for future disasters. The BDA maps and associated dataset represent a critical baseline against which national and local authorities can track risk-informed reconstruction and rehabilitation efforts for an effective recovery.  The first BDA was conducted in Dominica and Barbuda (In Dominica alone, almost 29,500 buildings were assessed by over 150 surveyors in three months). Most recently, on December 2018, a pilot exercise was conducted over 200 structures in Roseau, the capital of Dominica, to test the practicability of a new tool (BDA 2.0) incorporating lessons learnt from the first BDA.  The BDA 2.0 includes a more comprehensive and flexible questionnaire, a wider set of data fields, higher GPS accuracy and the possibility to use any smartphone for data gathering.The new questionnaire of approximately 190 questions follows a holistic and multidisciplinary approach that includes inputs from different UN agencies such as WFP and UNICEF. The BDA 2.0 not only aims to assess building damage but more multidimensional data gathering, including demographic and vulnerability information about households as well as damage to public facilities such as education or health facilities.  After the success of both the BDA 1.0 (Dominica and Barbuda in early 2018) and the BDA 2.0 pilot in Roseau (Dominica, December 2018), UNDP is aiming to incorporate the BDA Toolkit as a corporate tool. In that context, a partnership with [Impact](https://www.impact-initiatives.org/), a Swiss NGO that provides technical and operational support to strengthen systems and tools related to rapid assessment and analysis, has been established.  In sum; UNDP BDA team in Barbados, UNDP Crisis Bureau team in HQ and Impact are working together aiming to boost and standardize the BDA Toolkit for corporate use.  **In this regard, the UNDP BDA team in Barbados is seeking to engage an IC to support in technical aspects of this process.** |
| **III. Duties and Responsibilities** |
| The IC will report directly to the Technical Coordinator in close collaboration with the Resilience and Innovation Specialist consultant and the ICT Support. Under the guidance of their team, the IC will provide support in the following area: |
| **Building Damage Assessment 2.0: Data Visualization and Preparedness Phase**  The IC will:   1. Provide technical assistance to the Impact team in their partnership with the BDA team (both in Barbados office and the Crisis Bureau team in HQ) to boost the BDA Toolkit. 2. Support the BDA ICT team on developing the preparedness section of the data visualization; which includes:  * Developing a preparedness forecast formula using the data available from the pilot exercise to predict the damage caused to structures by a variety of natural hazards, including hurricanes, tsunamis, flooding and earthquakes to complement the BDA visualization. * Design a model for best evacuation routes and shelter locations to complement the BDA visualization. * Adding different layers of hazard maps to the existing visualization report.  1. Collaborate with the UNDP Philippines DevLive+ project in relevant tasks (DevLive+ is a similar project developed by UNDP colleagues in Philippines and it is expected to share technical knowledge with them). 2. Liaise with other UNDP teams that support the BDA Toolkit, including the Bureau for Management Services (BMS) and the Office of Information Management and Technology (OIMT), as well as with external partners such as academia and private sector. 3. Any other technical requirement that may arise during the process of boosting the BDA. |
| **IV. Duration of the Consultancy** |
| The duration of the consultancy will be for a 2.5 months period. |
| **V. Competency requirements and Education** |
| **Technical/Functional**  The IC must fulfil the minimum requirements hereunder:   * Education and experience: BA or equivalent in engineering, data science, statistics, computer/information technology programming or related field; * Minimum of 1-2 years of experience in working on structural engineering, statistical model building, GIS mapping or similar field complemented with an academic background in the relevant field also acceptable; * Solid IT background is an asset; * Experience working with large datasets in Excel, or similar, is an asset; * Background in disaster recovery and preparedness is an asset; * Experience with early warning systems is an asset; * Background in statistics or statistical analysis (focus on regression analysis, principal component analysis and/or geospatial analysis) is an asset; * Interest in recovery work; * Language: English at a working level.   **Core Behavioral Competencies include:**   * Effective interactive communication; * Client service and people-oriented; * Initiative taking; * Creative thinking; * Relationship/network building; * Teamwork and cooperation; * Adaptability; * Effective time management and ability to work within tight deadlines. |
| **VI. Supervision** |
| The IC will report directly to the Technical Coordinator in close collaboration with the Resilience and Innovation Specialist consultant and the ICT Support. |
| **VII. Deliverables** |
| |  |  |  | | --- | --- | --- | | Deliverables | Timeline | Payment | | * Preparation of the preparedness section (preparedness forecast formula, a model for evacuation routes and hazard maps) initiated. * Other technical inputs provided. | 3 weeks after signature of contract | 40% | | * Preparation of the preparedness section (preparedness forecast formula, a model for evacuation routes and hazard maps) advanced. * Other technical inputs provided. | 5 weeks after signature of contract | 30% | | * Preparedness forecast formula for different natural disaster scenarios (tsunami, hurricane, earthquake, flooding) finalized. * Model for best evacuation routes and shelter locations completed. * Hazard maps included. * Other technical inputs provided. * Final activities report completed. * Technical report completed. | 8 weeks after signature of contract | 30% | |
| **VIII. Documents to be included when submitting the Proposals** |
| Interested individual consultants must submit the following documents/information to demonstrate their qualifications:  1. Updated CV  2. Financial proposal  Lump sum contracts  The financial proposal shall specify a total lump sum amount, and payment terms around specific and measurable (qualitative and quantitative) deliverables (i.e. whether payments fall in installments or upon completion of the entire contract). Payments are based upon output, i.e. upon delivery of the services specified in the TOR. In order to assist the requesting unit in the comparison of financial proposals, the financial proposal will include a breakdown of this lump sum amount (including travel, per diems, and number of anticipated working days).  TRAVEL  All envisaged travel costs must be included in the financial proposal. This includes all travel to join duty station/repatriation travel. In general, UNDP should not accept travel costs exceeding those of an economy class ticket. Should the Individual Consultant wish to travel on a higher class he/she should do so using their own resources.  In the case of unforeseeable travel, payment of travel costs including tickets, lodging and terminal expenses should be agreed upon, between the respective business unit and Individual Consultant, prior to travel and will be reimbursed.  EVALUATION  Individual consultants will be evaluated based on the following methodologies:   * Cumulative analysis   When using this weighted scoring method, the award of the contract should be made to the individual consultant whose offer has been evaluated and determined as:   1. responsive/compliant/acceptable, and 2. Having received the highest score out of a pre-determined set of weighted technical and financial criteria\*\* specific to the solicitation   \* Technical Criteria weight; [70%]; \* Financial Criteria weight; [30%]  Only candidates obtaining a minimum of 49 points would be considered for the Financial Evaluation.   |  |  |  | | --- | --- | --- | | Criteria | Weight | Max. Point | | Technical | 70 | 70 | | * At least 7 years of relevant work experience field of expertise (related to gender equality, climate change or disaster recovery), Caribbean experience is desirable * Specific training in facilitation methods is a distinct asset | 30 | 30 | | * At least 5 previous similar specialized facilitation assignments, preferably in the target countries (provide evidence of work and outcome) | 20 | 20 | | * An advanced degree (Masters or higher) in gender equality, sociology, social policy, development studies, climate change and development, environmental management, disaster management, or a related field | 20 | 20 | | Financial | 30 | 30 | |