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Resilient nations.*

INVITATION TO BID

**Firm/Institution/Organization for development of
community-based disaster monitoring and warning system
for coastal areas in Viet Nam**

ITB No.: N-210501

Project: Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam

Country: Viet Nam

Issued on: 19 May 2021

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SECTION 1. LETTER OF INVITATION

The United Nations Development Programme (UNDP) hereby invites you to submit a Bid to this Invitation to Bid (ITB) for the above-referenced subject.

This ITB includes the following documents and the General Terms and Conditions of Contract which is inserted in the Bid Data Sheet:

- Section 1: This Letter of Invitation
- Section 2: Instruction to Bidders
- Section 3: Bid Data Sheet (BDS)
- Section 4: Evaluation Criteria
- Section 5: Terms of Reference for required equipment and related services
- Section 6: Returnable Bidding Forms
 - Form A: Bid Submission Form
 - Form B: Bidder Information Form
 - Form C: Joint Venture/Consortium/Association Information Form
 - Form D: Qualification Form
 - Form E: Format of Technical Bid
 - Form F: Price Schedule

If you are interested in submitting a Bid in response to this ITB, please prepare your Bid in accordance with the requirements and procedure as set out in this ITB and submit it by the Deadline for Submission of Bids set out in Bid Data Sheet.

Please acknowledge receipt of this ITB by sending an email to procurement.vn@undp.org, indicating whether you intend to submit a Bid or otherwise. You may also utilize the "Accept Invitation" function in eTendering system, where applicable. This will enable you to receive amendments or updates to the ITB. Should you require further clarifications, kindly communicate with the contact person/s identified in the attached Data Sheet as the focal point for queries on this ITB.

UNDP looks forward to receiving your Bid and thank you in advance for your interest in UNDP procurement opportunities.

Issued by



Name: Nguyen Thuy Nga
Title: Procurement Executive
Date: **May 19, 2021**

Approved by:



Name: Tran Thi Hong
Title: Head of Procurement Unit
Date: **May 19, 2021**

SECTION 2. INSTRUCTION TO BIDDERS

GENERAL PROVISIONS

1. Introduction	<p>1.1 Bidders shall adhere to all the requirements of this ITB, including any amendments made in writing by UNDP. This ITB is conducted in accordance with the UNDP Programme and Operations Policies and Procedures (POPP) on Contracts and Procurement which can be accessed at https://popp.undp.org/SitePages/POPPBSUnit.aspx?TermID=254a9f96-b883-476a-8ef8-e81f93a2b38d</p> <p>1.2 Any Bid submitted will be regarded as an offer by the Bidder and does not constitute or imply the acceptance of the Bid by UNDP. UNDP is under no obligation to award a contract to any Bidder as a result of this ITB.</p> <p>1.3 UNDP reserves the right to cancel the procurement process at any stage without any liability of any kind for UNDP, upon notice to the bidders or publication of cancellation notice on UNDP website.</p> <p>1.4 As part of the bid, it is desired that the Bidder registers at the United Nations Global Marketplace (UNGM) website (www.ungm.org). The Bidder may still submit a bid even if not registered with the UNGM. However, if the Bidder is selected for contract award, the Bidder must register on the UNGM prior to contract signature.</p>
2. Fraud & Corruption, Gifts and Hospitality	<p>2.1 UNDP strictly enforces a policy of zero tolerance on proscribed practices, including fraud, corruption, collusion, unethical or unprofessional practices, and obstruction of UNDP vendors and requires all bidders/vendors observe the highest standard of ethics during the procurement process and contract implementation. UNDP's Anti-Fraud Policy can be found at http://www.undp.org/content/undp/en/home/operations/accountability/audit/office_of_audit_andinvestigation.html#anti</p> <p>2.2 Bidders/vendors shall not offer gifts or hospitality of any kind to UNDP staff members including recreational trips to sporting or cultural events, theme parks or offers of holidays, transportation, or invitations to extravagant lunches or dinners.</p> <p>2.3 In pursuance of this policy, UNDP:</p> <p>(a) Shall reject a bid if it determines that the selected bidder has engaged in any corrupt or fraudulent practices in competing for the contract in question;</p> <p>(b) Shall declare a vendor ineligible, either indefinitely or for a stated period, to be awarded a contract if at any time it determines that the vendor has engaged in any corrupt or fraudulent practices in competing for, or in executing a UNDP contract.</p> <p>2.4 All Bidders must adhere to the UN Supplier Code of Conduct, which may be found at https://www.un.org/Depts/ptd/about-us/un-supplier-code-conduct</p>
3. Eligibility	<p>3.1 A vendor should not be suspended, debarred, or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization. Vendors are therefore required to disclose to UNDP whether they are subject to any sanction or temporary suspension imposed by these organizations.</p> <p>3.2 It is the Bidder's responsibility to ensure that its employees, joint venture</p>

	members, sub-contractors, service providers, suppliers and/or their employees meet the eligibility requirements as established by UNDP.
4. Conflict of Interests	<p>4.1 Bidders must strictly avoid conflicts with other assignments or their own interests, and act without consideration for future work. Bidders found to have a conflict of interest shall be disqualified. Without limitation on the generality of the above, Bidders, and any of their affiliates, shall be considered to have a conflict of interest with one or more parties in this solicitation process, if they:</p> <ul style="list-style-type: none"> a) Are or have been associated in the past, with a firm or any of its affiliates which have been engaged by UNDP to provide services for the preparation of the design, specifications, Terms of Reference, cost analysis/estimation, and other documents to be used for the procurement of the goods and services in this selection process; b) Were involved in the preparation and/or design of the programme/project related to the goods and/or services requested under this ITB; or c) Are found to be in conflict for any other reason, as may be established by, or at the discretion of UNDP. <p>4.2 In the event of any uncertainty in the interpretation of a potential conflict of interest, Bidders must disclose to UNDP, and seek UNDP's confirmation on whether or not such conflict exists.</p> <p>4.3 Similarly, the Bidders must disclose in their Bid their knowledge of the following:</p> <ul style="list-style-type: none"> a) If the owners, part-owners, officers, directors, controlling shareholders, of the bidding entity or key personnel who are family members of UNDP staff involved in the procurement functions and/or the Government of the country or any Implementing Partner receiving goods and/or services under this ITB; and b) All other circumstances that could potentially lead to actual or perceived conflict of interest, collusion or unfair competition practices. <p>Failure to disclose such an information may result in the rejection of the Bid or Bids affected by the non-disclosure.</p> <p>4.4 The eligibility of Bidders that are wholly or partly owned by the Government shall be subject to UNDP's further evaluation and review of various factors such as being registered, operated and managed as an independent business entity, the extent of Government ownership/share, receipt of subsidies, mandate and access to information in relation to this ITB, among others. Conditions that may lead to undue advantage against other Bidders may result in the eventual rejection of the Bid.</p>
B. PREPARATION OF BIDS	
5. General Considerations	<p>5.1 In preparing the Bid, the Bidder is expected to examine the ITB in detail. Material deficiencies in providing the information requested in the ITB may result in rejection of the Bid.</p> <p>5.2 The Bidder will not be permitted to take advantage of any errors or omissions in the ITB. Should such errors or omissions be discovered, the Bidder must notify the UNDP accordingly.</p>
6. Cost of Preparation of Bid	<p>6.1 The Bidder shall bear all costs related to the preparation and/or submission of the Bid, regardless of whether its Bid is selected or not. UNDP shall not be responsible or liable for those costs, regardless of the conduct or outcome of the procurement process.</p>

7. Language	7.1 The Bid, as well as any and all related correspondence exchanged by the Bidder and UNDP, shall be written in the language (s) specified in the BDS.
8. Documents Comprising the Bid	8.1 The Bid shall comprise of the following documents and related forms which details are provided in the BDS: a) Documents Establishing the Eligibility and Qualifications of the Bidder; b) Technical Bid; c) Price Schedule; d) Bid Security, if required by BDS; e) Any attachments and/or appendices to the Bid.
9. Documents Establishing the Eligibility and Qualifications of the Bidder	9.1 The Bidder shall furnish documentary evidence of its status as an eligible and qualified vendor, using the Forms provided under Section 6 and providing documents required in those forms. In order to award a contract to a Bidder, its qualifications must be documented to UNDP's satisfaction.
10. Technical Bid Format and Content	10.1 The Bidder is required to submit a Technical Bid using the Standard Forms and templates provided in Section 6 of the ITB. 10.2 Samples of items, when required as per Section 5, shall be provided within the time specified and unless otherwise specified by the Purchaser, at no expense to the UNDP. If not destroyed by testing, samples will be returned at Bidder's request and expense, unless otherwise specified. 10.3 When applicable and required as per Section 5, the Bidder shall describe the necessary training programme available for the maintenance and operation of the equipment offered as well as the cost to the UNDP. Unless otherwise specified, such training as well as training materials shall be provided in the language of the Bid as specified in the BDS. 10.4 When applicable and required as per Section 5, the Bidder shall certify the availability of spare parts for a period of at least five (5) years from date of delivery, or as otherwise specified in this ITB.
11. Price Schedule	11.1 The Price Schedule shall be prepared using the Form provided in Section 6 of the ITB and taking into consideration the requirements in the ITB. 11.2 Any requirement described in the Technical Bid but not priced in the Price Schedule, shall be assumed to be included in the prices of other activities or items, as well as in the final total price.
12. Bid Security	12.1 A Bid Security, if required by BDS, shall be provided in the amount and form indicated in the BDS. The Bid Security shall be valid for a minimum of thirty (30) days after the final date of validity of the Bid. 12.2 The Bid Security shall be included along with the Bid. If Bid Security is required by the ITB but is not found in the Bid, the offer shall be rejected. 12.3 If the Bid Security amount or its validity period is found to be less than what is required by UNDP, UNDP shall reject the Bid. 12.4 In the event an electronic submission is allowed in the BDS, Bidders shall include a copy of the Bid Security in their bid and the original of the Bid Security must be sent via courier or hand delivery as per the instructions in BDS. 12.5 The Bid Security may be forfeited by UNDP, and the Bid rejected, in the event of

	<p>any, or combination, of the following conditions:</p> <ul style="list-style-type: none"> a) If the Bidder withdraws its offer during the period of the Bid Validity specified in the BDS, or; b) In the event the successful Bidder fails: <ul style="list-style-type: none"> i. to sign the Contract after UNDP has issued an award; or ii. to furnish the Performance Security, insurances, or other documents that UNDP may require as a condition precedent to the effectivity of the contract that may be awarded to the Bidder.
13. Currencies	<p>13.1 All prices shall be quoted in the currency or currencies indicated in the BDS. Where Bids are quoted in different currencies, for the purposes of comparison of all Bids:</p> <ul style="list-style-type: none"> a) UNDP will convert the currency quoted in the Bid into the UNDP preferred currency, in accordance with the prevailing UN operational rate of exchange on the last day of submission of Bids; and b) In the event that UNDP selects a Bid for award that is quoted in a currency different from the preferred currency in the BDS, UNDP shall reserve the right to award the contract in the currency of UNDP's preference, using the conversion method specified above.
14. Joint Venture, Consortium or Association	<p>14.1 If the Bidder is a group of legal entities that will form or have formed a Joint Venture (JV), Consortium or Association for the Bid, they shall confirm in their Bid that : (i) they have designated one party to act as a lead entity, duly vested with authority to legally bind the members of the JV, Consortium or Association jointly and severally, which shall be evidenced by a duly notarized Agreement among the legal entities, and submitted with the Bid; and (ii) if they are awarded the contract, the contract shall be entered into, by and between UNDP and the designated lead entity, who shall be acting for and on behalf of all the member entities comprising the joint venture.</p> <p>14.2 After the Deadline for Submission of Bid, the lead entity identified to represent the JV, Consortium or Association shall not be altered without the prior written consent of UNDP.</p> <p>14.3 The lead entity and the member entities of the JV, Consortium or Association shall abide by the provisions of Clause 9 herein in respect of submitting only one Bid.</p> <p>14.4 The description of the organization of the JV, Consortium or Association must clearly define the expected role of each of the entities in the joint venture in delivering the requirements of the ITB, both in the Bid and the JV, Consortium or Association Agreement. All entities that comprise the JV, Consortium or Association shall be subject to the eligibility and qualification assessment by UNDP.</p> <p>14.5 A JV, Consortium or Association in presenting its track record and experience should clearly differentiate between:</p> <ul style="list-style-type: none"> a) Those that were undertaken together by the JV, Consortium or Association; and b) Those that were undertaken by the individual entities of the JV, Consortium or Association. <p>14.6 Previous contracts completed by individual experts working privately but who are permanently or were temporarily associated with any of the member firms cannot be claimed as the experience of the JV, Consortium or Association or</p>

	<p>those of its members, but should only be claimed by the individual experts themselves in their presentation of their individual credentials</p> <p>14.7 JV, Consortium or Associations are encouraged for high value, multi-sectoral requirements when the spectrum of expertise and resources required may not be available within one firm.</p>
15. Only One Bid	<p>15.1 The Bidder (including the individual members of any Joint Venture) shall submit only one Bid, either in its own name or as part of a Joint Venture.</p> <p>15.2 Bids submitted by two (2) or more Bidders shall all be rejected if they are found to have any of the following:</p> <ul style="list-style-type: none"> a) they have at least one controlling partner, director or shareholder in common; or b) any one of them receive or have received any direct or indirect subsidy from the other/s; or c) they have the same legal representative for purposes of this ITB; or d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about, or influence on the Bid of another Bidder regarding this ITB process; e) they are subcontractors to each other's Bid, or a subcontractor to one Bid also submits another Bid under its name as lead Bidder; or some key personnel proposed to be in the team of one Bidder participates in more than one Bid received for this ITB process. This condition relating to the personnel, does not apply to subcontractors being included in more than one Bid.
16. Bid Validity Period	<p>16.1 Bids shall remain valid for the period specified in the BDS, commencing on the Deadline for Submission of Bids. A Bid valid for a shorter period may be rejected by UNDP and rendered non-responsive.</p> <p>16.2 During the Bid validity period, the Bidder shall maintain its original Bid without any change, including the availability of the Key Personnel, the proposed rates and the total price.</p>
17. Extension of Bid Validity Period	<p>17.1 In exceptional circumstances, prior to the expiration of the Bid validity period, UNDP may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing, and shall be considered integral to the Bid.</p> <p>17.2 If the Bidder agrees to extend the validity of its Bid, it shall be done without any change to the original Bid.</p> <p>17.3 The Bidder has the right to refuse to extend the validity of its Bid, in which case, the Bid shall not be further evaluated.</p>
18. Clarification of Bid (from the Bidders)	<p>18.1 Bidders may request clarifications on any of the ITB documents no later than the date indicated in the BDS. Any request for clarification must be sent in writing in the manner indicated in the BDS. If inquiries are sent other than specified channel, even if they are sent to a UNDP staff member, UNDP shall have no obligation to respond or confirm that the query was officially received.</p> <p>18.2 UNDP will provide the responses to clarifications through the method specified in the BDS.</p> <p>18.3 UNDP shall endeavour to provide responses to clarifications in an expeditious manner, but any delay in such response shall not cause an obligation on the part of UNDP to extend the submission date of the Bids, unless UNDP deems that</p>

	such an extension is justified and necessary.
19. Amendment of Bids	<p>19.1 At any time prior to the deadline of Bid submission, UNDP may for any reason, such as in response to a clarification requested by a Bidder, modify the ITB in the form of an amendment to the ITB. Amendments will be made available to all prospective bidders.</p> <p>19.2 If the amendment is substantial, UNDP may extend the Deadline for submission of Bid to give the Bidders reasonable time to incorporate the amendment into their Bids.</p>
20. Alternative Bids	<p>20.1 Unless otherwise specified in the BDS, alternative Bids shall not be considered. If submission of alternative Bid is allowed by BDS, a Bidder may submit an alternative Bid, but only if it also submits a Bid conforming to the ITB requirements. Where the conditions for its acceptance are met, or justifications are clearly established, UNDP reserves the right to award a contract based on an alternative Bid.</p> <p>20.2 If multiple/alternative bids are being submitted, they must be clearly marked as "Main Bid" and "Alternative Bid"</p>
21. Pre-Bid Conference	<p>21.1 When appropriate, a pre-bid conference will be conducted at the date, time and location specified in the BDS. All Bidders are encouraged to attend. Non-attendance, however, shall not result in disqualification of an interested Bidder. Minutes of the Bidder's conference will be disseminated on the procurement website and shared by email or on the e-Tendering platform as specified in the BDS. No verbal statement made during the conference shall modify the terms and conditions of the ITB, unless specifically incorporated in the Minutes of the Bidder's Conference or issued/posted as an amendment to ITB.</p>
c. SUBMISSION AND OPENING OF BIDS	
22. Submission	<p>22.1 The Bidder shall submit a duly signed and complete Bid comprising the documents and forms in accordance with requirements in the BDS. The Price Schedule shall be submitted together with the Technical Bid. Bid can be delivered either personally, by courier, or by electronic method of transmission as specified in the BDS.</p> <p>22.2 The Bid shall be signed by the Bidder or person(s) duly authorized to commit the Bidder. The authorization shall be communicated through a document evidencing such authorization issued by the legal representative of the bidding entity, or a Power of Attorney, accompanying the Bid.</p> <p>22.3 Bidders must be aware that the mere act of submission of a Bid, in and of itself, implies that the Bidder fully accepts the UNDP General Contract Terms and Conditions.</p>
Hard (manual) submission	<p>22.4 Hard copy (manual) submission by courier or hand delivery allowed or specified in the BDS shall be governed as follows:</p> <p>a) The signed Bid shall be marked "Original", and its copies marked "Copy" as appropriate. The number of copies is indicated in the BDS. All copies shall be made from the signed original only. If there are discrepancies between the original and the copies, the original shall prevail.</p> <p>(b) The Technical Bid and Price Schedule must be sealed and submitted together in an envelope, which shall:</p> <p>i. Bear the name of the Bidder;</p>

	<ul style="list-style-type: none"> ii. Be addressed to UNDP as specified in the BDS; and iii. Bear a warning not to open before the time and date for Bid opening as specified in the BDS. <p>If the envelope with the Bid is not sealed and marked as required, UNDP shall assume no responsibility for the misplacement, loss, or premature opening of the Bid.</p>
Email and eTendering submissions	<p>22.5 Electronic submission through email or eTendering, if allowed as specified in the BDS, shall be governed as follows:</p> <ul style="list-style-type: none"> a) Electronic files that form part of the Bid must be in accordance with the format and requirements indicated in BDS; b) Documents which are required to be in original form (e.g. Bid Security, etc.) must be sent via courier or hand delivered as per the instructions in BDS. <p>22.6 Detailed instructions on how to submit, modify or cancel a bid in the eTendering system are provided in the eTendering system Bidder User Guide and Instructional videos available on this link: https://www.undp.org/content/undp/en/home/procurement/business/resources-for-bidders</p>
23. Deadline for Submission of Bids and Late Bids	<p>23.1 Complete Bids must be received by UNDP in the manner, and no later than the date and time, specified in the BDS. UNDP shall only recognise the actual date and time that the bid was received by UNDP</p> <p>23.2 UNDP shall not consider any Bid that is received after the deadline for the submission of Bids.</p>
24. Withdrawal, Substitution, and Modification of Bids	<p>24.1 A Bidder may withdraw, substitute or modify its Bid after it has been submitted at any time prior to the deadline for submission.</p> <p>24.2 Manual and Email submissions: A bidder may withdraw, substitute or modify its Bid by sending a written notice to UNDP, duly signed by an authorized representative, and shall include a copy of the authorization (or a Power of Attorney). The corresponding substitution or modification of the Bid, if any, must accompany the respective written notice. All notices must be submitted in the same manner as specified for submission of Bids, by clearly marking them as "WITHDRAWAL" "SUBSTITUTION," or "MODIFICATION"</p> <p>24.3 eTendering: A Bidder may withdraw, substitute or modify its Bid by Cancelling, Editing, and re-submitting the Bid directly in the system. It is the responsibility of the Bidder to properly follow the system instructions, duly edit and submit a substitution or modification of the Bid as needed. Detailed instructions on how to cancel or modify a Bid directly in the system are provided in the Bidder User Guide and Instructional videos.</p> <p>24.4 Bids requested to be withdrawn shall be returned unopened to the Bidders (only for manual submissions), except if the bid is withdrawn after the bid has been opened.</p>
25. Bid Opening	<p>25.1 UNDP will open the Bid in the presence of an ad-hoc committee formed by UNDP of at least two (2) members.</p> <p>25.2 The Bidders' names, modifications, withdrawals, the condition of the envelope labels/seals, the number of folders/files and all other such other details as UNDP may consider appropriate, will be announced at the opening. No Bid shall be rejected at the opening stage, except for late submissions, in which case, the Bid shall be returned unopened to the Bidders.</p>

	25.3 In the case of e-Tendering submission, bidders will receive an automatic notification once the Bid is opened.
D. EVALUATION OF BIDS	
26. Confidentiality	<p>26.1 Information relating to the examination, evaluation, and comparison of Bids, and the recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process, even after publication of the contract award.</p> <p>26.2 Any effort by a Bidder or anyone on behalf of the Bidder to influence UNDP in the examination, evaluation and comparison of the Bids or contract award decisions may, at UNDP's decision, result in the rejection of its Bid and may subsequently be subject to the application of prevailing UNDP's vendor sanctions procedures.</p>
27. Evaluation of Bids	<p>27.1 UNDP will conduct the evaluation solely on the basis of the Bids received.</p> <p>27.2 Evaluation of Bids shall be undertaken in the following steps:</p> <ul style="list-style-type: none"> a) Preliminary Examination including Eligibility b) Arithmetical check and ranking of bidders who passed preliminary examination by price. c) Qualification assessment (if pre-qualification was not done) a) Evaluation of Technical Bids b) Evaluation of prices <p>Detailed evaluation will be focussed on the 3 - 5 lowest priced bids. Further higher priced bids shall be added for evaluation if necessary</p>
28. Preliminary Examination	<p>28.1 UNDP shall examine the Bids to determine whether they are complete with respect to minimum documentary requirements, whether the documents have been properly signed, and whether the Bids are generally in order, among other indicators that may be used at this stage. UNDP reserves the right to reject any Bid at this stage.</p>
29. Evaluation of Eligibility and Qualification	<p>29.1 Eligibility and Qualification of the Bidder will be evaluated against the Minimum Eligibility/Qualification requirements specified in the Section 4 (Evaluation Criteria).</p> <p>29.2 In general terms, vendors that meet the following criteria may be considered qualified:</p> <ul style="list-style-type: none"> a) They are not included in the UN Security Council 1267/1989 Committee's list of terrorists and terrorist financiers, and in UNDP's ineligible vendors' list; b) They have a good financial standing and have access to adequate financial resources to perform the contract and all existing commercial commitments, c) They have the necessary similar experience, technical expertise, production capacity, quality certifications, quality assurance procedures and other resources applicable to the supply of goods and/or services required; d) They are able to comply fully with the UNDP General Terms and Conditions of Contract; e) They do not have a consistent history of court/arbitral award decisions against the Bidder; and f) They have a record of timely and satisfactory performance with their clients.

30. Evaluation of Technical Bid and prices	<p>30.1 The evaluation team shall review and evaluate the Technical Bids on the basis of their responsiveness to the Schedule of Requirements and Technical Specifications and other documentation provided, applying the procedure indicated in the BDS and other ITB documents. When necessary, and if stated in the BDS, UNDP may invite technically responsive bidders for a presentation related to their technical Bids. The conditions for the presentation shall be provided in the bid document where required.</p>
31. Due diligence	<p>31.1 UNDP reserves the right to undertake a due diligence exercise, aimed at determining to its satisfaction, the validity of the information provided by the Bidder. Such exercise shall be fully documented and may include, but need not be limited to, all or any combination of the following:</p> <ul style="list-style-type: none"> a) Verification of accuracy, correctness and authenticity of information provided by the Bidder; b) Validation of extent of compliance to the ITB requirements and evaluation criteria based on what has so far been found by the evaluation team; c) Inquiry and reference checking with Government entities with jurisdiction on the Bidder, or with previous clients, or any other entity that may have done business with the Bidder; d) Inquiry and reference checking with previous clients on the performance on on-going or completed contracts, including physical inspections of previous works, as deemed necessary; e) Physical inspection of the Bidder's offices, branches or other places where business transpires, with or without notice to the Bidder; f) Other means that UNDP may deem appropriate, at any stage within the selection process, prior to awarding the contract.
32. Clarification of Bids	<p>32.1 To assist in the examination, evaluation and comparison of Bids, UNDP may, at its discretion, request any Bidder for a clarification of its Bid.</p> <p>32.2 UNDP's request for clarification and the response shall be in writing and no change in the prices or substance of the Bid shall be sought, offered, or permitted, except to provide clarification, and confirm the correction of any arithmetic errors discovered by UNDP in the evaluation of the Bids, in accordance with the ITB.</p> <p>32.3 Any unsolicited clarification submitted by a Bidder in respect to its Bid, which is not a response to a request by UNDP, shall not be considered during the review and evaluation of the Bids.</p>
33. Responsiveness of Bid	<p>33.1 UNDP's determination of a Bid's responsiveness will be based on the contents of the bid itself. A substantially responsive Bid is one that conforms to all the terms, conditions, specifications and other requirements of the ITB without material deviation, reservation, or omission.</p> <p>33.2 If a bid is not substantially responsive, it shall be rejected by UNDP and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.</p>
34. Nonconformities, Reparable Errors and Omissions	<p>34.1 Provided that a Bid is substantially responsive, UNDP may waive any non-conformities or omissions in the Bid that, in the opinion of UNDP, do not constitute a material deviation.</p> <p>34.2 UNDP may request the Bidder to submit the necessary information or documentation, within a reasonable period, to rectify nonmaterial nonconformities or omissions in the Bid related to documentation requirements.</p>

	<p>Such omission shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.</p> <p>34.3 For the bids that have passed the preliminary examination, UNDP shall check and correct arithmetical errors as follows:</p> <ul style="list-style-type: none"> a) if there is a discrepancy between the unit price and the line item total that is obtained by multiplying the unit price by the quantity, the unit price shall prevail and the line item total shall be corrected, unless in the opinion of UNDP there is an obvious misplacement of the decimal point in the unit price; in which case, the line item total as quoted shall govern and the unit price shall be corrected; b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. <p>34.4 If the Bidder does not accept the correction of errors made by UNDP, its Bid shall be rejected.</p>
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E. AWARD OF CONTRACT

35. Right to Accept, Reject, Any or All Bids	<p>35.1 UNDP reserves the right to accept or reject any bid, to render any or all of the bids as non-responsive, and to reject all Bids at any time prior to award of contract, without incurring any liability, or obligation to inform the affected Bidder(s) of the grounds for UNDP's action. UNDP shall not be obliged to award the contract to the lowest priced offer.</p>
36. Award Criteria	<p>36.1 Prior to expiration of the period of Bid validity, UNDP shall award the contract to the qualified and eligible Bidder that is found to be responsive to the requirements of the Schedule of Requirements and Technical Specification, and has offered the lowest price.</p>
37. Debriefing	<p>37.1 In the event that a Bidder is unsuccessful, the Bidder may request for a debriefing from UNDP. The purpose of the debriefing is to discuss the strengths and weaknesses of the Bidder's submission, in order to assist the Bidder in improving its future Bids for UNDP procurement opportunities. The content of other Bids and how they compare to the Bidder's submission shall not be discussed.</p>
38. Right to Vary Requirements at the Time of Award	<p>38.1 At the time of award of Contract, UNDP reserves the right to vary the quantity of goods and/or services, by up to a maximum twenty-five per cent (25%) of the total offer, without any change in the unit price or other terms and conditions.</p>
39. Contract Signature	<p>39.1 Within fifteen (15) days from the date of receipt of the Contract, the successful Bidder shall sign and date the Contract and return it to UNDP. Failure to do so may constitute sufficient grounds for the annulment of the award, and forfeiture of the Bid Security, if any, and on which event, UNDP may award the Contract to the Second highest rated or call for new Bids.</p>
40. Contract Type and General	<p>40.1 The types of Contract to be signed and the applicable UNDP Contract General Terms and Conditions, as specified in BDS, can be accessed at http://www.undp.org/content/undp/en/home/procurement/business/how-we-</p>

Terms and Conditions	buy.html
41. Performance Security	<p>41.1 A performance security, if required in the BDS, shall be provided in the amount specified in BDS and form available at https://popp.undp.org/layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PSU_Solicitation_Performance%20Guarantee%20Form.docx&action=default within a maximum of fifteen (15) days of the contract signature by both parties. Where a performance security is required, the receipt of the performance security by UNDP shall be a condition for rendering the contract effective.</p>
42. Bank Guarantee for Advanced Payment	<p>42.1 Except when the interests of UNDP so require, it is UNDP's standard practice to not make advance payment(s) (i.e., payments without having received any outputs). If an advance payment is allowed as per the BDS, and exceeds 20% of the total contract price, or USD 30,000, whichever is less, the Bidder shall submit a Bank Guarantee in the full amount of the advance payment in the form available at https://popp.undp.org/layouts/15/WopiFrame.aspx?sourcedoc=/UNDP_POPP_DOCUMENT_LIBRARY/Public/PSU_Contract%20Management%20Payment%20and%20Taxes_Advanced%20Payment%20Guarantee%20Form.docx&action=default</p>
43. Liquidated Damages	<p>43.1 If specified in the BDS, UNDP shall apply Liquidated Damages for the damages and/or risks caused to UNDP resulting from the Contractor's delays or breach of its obligations as per Contract.</p>
44. Payment Provisions	<p>44.1 Payment will be made only upon UNDP's acceptance of the goods and/or services performed. The terms of payment shall be within thirty (30) days, after receipt of invoice and certification of acceptance of goods and/or services issued by the proper authority in UNDP with direct supervision of the Contractor. Payment will be effected by bank transfer in the currency of the contract.</p>
45. Vendor Protest	<p>45.1 UNDP's vendor protest procedure provides an opportunity for appeal to those persons or firms not awarded a contract through a competitive procurement process. In the event that a Bidder believes that it was not treated fairly, the following link provides further details regarding UNDP vendor protest procedures: http://www.undp.org/content/undp/en/home/procurement/business/protest-and-sanctions.html</p>
46. Other Provisions	<p>46.1 In the event that the Bidder offers a lower price to the host Government (e.g. General Services Administration (GSA) of the federal government of the United States of America) for similar goods and/or services, UNDP shall be entitled to the same lower price. The UNDP General Terms and Conditions shall have precedence.</p> <p>46.2 UNDP is entitled to receive the same pricing offered by the same Contractor in contracts with the United Nations and/or its Agencies. The UNDP General Terms and Conditions shall have precedence.</p> <p>46.3 The United Nations has established restrictions on employment of (former) UN staff who have been involved in the procurement process as per bulletin ST/SGB/2006/15 http://www.un.org/en/ga/search/view_doc.asp?symbol=ST/SGB/2006/15&referer</p>

SECTION 3. BID DATA SHEET

The following data for the goods and/or services to be procured shall complement, supplement, or amend the provisions in the Invitation to Bid. In the case of a conflict between the Instructions to Bidders, the Bid Data Sheet, and other annexes or references attached to the Bid Data Sheet, the provisions in the Bid Data Sheet shall prevail.

BDS No.	Ref. to Section.2	Data	Specific Instructions / Requirements
1	7	Language of the Bid	English
2		Submitting Bids for Parts or sub-parts of the Schedule of Requirements (partial bids)	Not Allowed
3	20	Alternative Bids	Shall not be considered
4	21	Pre-Bid conference	<p>Will be Conducted</p> <p>Time: 09.30 am -11.30am (Ha Noi time)</p> <p>Date: 26 May 2021</p> <p>Venue : Zoom link to be sent to registered bidders.</p> <p>Bidders should register 1 day in advance to participate in the pre-bid conference.</p> <p>The UNDP focal point for the arrangement is:</p> <p>Nguyen Thuy Nga</p> <p>Telephone: +84-0243 8501831</p> <p>E-mail: nguyen.thuy.nga@undp.org</p>
5	16	Bid Validity Period	90 days
6	13	Bid Security	Not Required
7	41	Advanced Payment upon signing of contract	Not Allowed
8	42	Liquidated Damages	Will not be imposed
9	40	Performance Security	Not Required

10	12	Currency of Bid	United States Dollar
11	31	Deadline for submitting requests for clarifications/ questions	03 days before the submission deadline
12	31	Contact Details for submitting clarifications/questions	Focal Person in UNDP: Nguyen Thuy Nga Address: 304 Kim Ma street, Ha Noi, Viet Nam E-mail address: nguyen.thuy.nga@undp.org
13	18, 19 and 21	Manner of Disseminating Supplemental Information to the ITB and responses/clarifications to queries	Posted directly to eTendering And UNDP website
14	23	Deadline for Submission	As indicated in eTendering system. Note that system time zone is in EST/EDT (New York) time zone. <u>PLEASE NOTE:</u> 1. Date and time visible on the main screen of event (on e-tendering portal) will be final and prevail over any other closing time indicated elsewhere, in case they are different. Please also note that the bid closing time shown in the PDF file generated by the system is not accurate due to a technical glitch that we will resolve soon. The correct bid closing time is as indicated in the e-tendering portal and system will not accept any bid after that time. It is the responsibility of the bidder to make sure bids are submitted within this deadline. UNDP will not accept any bid that is not submitted directly in the system. 2. Try to submit your bid a day prior or well before the closing time. Do not wait until last minute. If you face any issue submitting your bid at the last minute, UNDP may not be able to assist.
14	22	Allowable Manner of Submitting Bids	<input type="checkbox"/> Courier/Hand Delivery <input type="checkbox"/> Submission by email <input checked="" type="checkbox"/> e-Tendering <u>PLEASE NOTE: Proposals submitted by courier/hand delivery or email will be rejected.</u>
15	22	Bid Submission Address	<u>[Insert Physical or E-mail Address]</u> https://etendering.partneragencies.org <u>Insert BU Code and Event ID number</u> <u>BU Code: VNM10</u> <u>Event ID number: N-210501</u>

16	22	Electronic submission (eTendering) requirements	<ul style="list-style-type: none"> Format: pdf, excel, word, zipped files File names must be maximum 60 characters long and must not contain any letter or special character other than from Latin alphabet/keyboard. All files must be free of viruses and not corrupted. Max. File Size per transmission: 30MB Financial offer to be submitted in <u>both</u> formats: pdf file and excel file for the price calculation.
17	25	Date, time and venue for the opening of bid	bidders will receive an automatic notification once their Bids are opened.
18	27, 36	Evaluation Method for the Award of Contract	Lowest priced technically responsive, eligible and qualified bid.
19		Expected date for commencement of Contract	<i>June 28, 2021</i>
20		Maximum expected duration of contract	6 months
21	35	UNDP will award the contract to:	One Proposer Only
22	39	Type of Contract	Contract for Goods and/or Services to UNDP http://www.undp.org/content/undp/en/home/procurement/business/how-we-buy.html
23	39	UNDP Contract Terms and Conditions that will apply	UNDP General Terms and Conditions for Contracts http://www.undp.org/content/undp/en/home/procurement/business/how-we-buy.html
24		Other Information Related to the ITB	<p>Bidders are responsible for checking the UNDP website: https://etendering.partneragencies.org and http://www.vn.undp.org/content/vietnam/en/home/operations/procurement/procurement_notices.html</p> <p>for any addenda and updated deadline to this Invitation to Bid. UNDP reserves the right to post addenda up to the closing date for submissions. Hence bidders are advised to check the UNDP website frequently prior to submitting their bids. Bids submission by courier/hand delivery or email is not allowed.</p> <p>Visit this page for system user guides and videos in</p>

			<p>different languages: https://www.undp.org/procurement/business/resources-for-bidders</p> <p>If already registered, go to https://etendering.partneragencies.org and sign in using your username and password.</p> <p>Use “Forgotten password” link if you do not remember your password. Do not create a new profile.</p> <p>If you have never registered in the system before, you can register by visiting the link below and follow the instructions in the user guide (attached):</p> <p>https://etendering.partneragencies.org Username: event.guest Password: why2change</p> <p>It is strongly recommended to create a username with two parts: your first name and last name separated by a “.”, (similar to the one shown above). Once registered you will receive a valid password to the registered email address which you can use for signing in and changing your password.</p> <p>Please note that your new password should meet the following criteria:</p> <ul style="list-style-type: none"> • Minimum 8 characters • At least one UPPERCASE LETTER • At least one lowercase letter • At least one number <p>You can view and download tender documents with the guest account as per the above username and password. However, if you are interested to participate, you must register in the system and subscribe to this tender to be notified when amendments are made.</p>
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SECTION 4. EVALUATION CRITERIA

Preliminary Examination Criteria

Bids will be examined to determine whether they are complete and submitted in accordance with ITB requirements as per below criteria on a Yes/No basis:

- Appropriate signatures
- Minimum Bid documents provided
- Bid Validity

Minimum Eligibility and Qualification Criteria

Eligibility and Qualification will be evaluated on a Pass/Fail basis.

If the Bid is submitted as a Joint Venture/Consortium/Association, each member should meet the minimum criteria, unless otherwise specified.

Subject	Criteria	Document Submission requirement
ELIGIBILITY		
Legal Status	Vendor is a legally registered entity.	Form B: Bidder Information Form
Eligibility	Vendor is not suspended, nor debarred, nor otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization in accordance with ITB clause 3.	Form A: Bid Submission Form
Conflict of Interest	No conflicts of interest in accordance with ITB clause 4.	Form A: Bid Submission Form
Bankruptcy	Has not declared bankruptcy, is not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against the vendor that could impair its operations in the foreseeable future.	Form A: Bid Submission Form
QUALIFICATION		
History of Non-Performing Contracts¹	Non-performance of a contract did not occur as a result of contractor default for the last 3 years.	Form D: Qualification Form
Litigation History	No consistent history of court/arbitral award decisions against the Bidder for the last 3 years.	Form D: Qualification Form
Previous Experience	5 years of relevant experience.	Form D: Qualification Form

¹ Non-performance, as decided by UNDP, shall include all contracts where (a) non-performance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Non-performance shall not include contracts where Employers decision was overruled by the dispute resolution mechanism. Non-performance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the Bidder have been exhausted.

	<p>2 contracts of similar value, nature and complexity implemented over the last 5 years.</p> <p><i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i></p>	Form D: Qualification Form
Financial Standing	<p>Minimum average annual turnover of USD800,000 for the last 3 years.</p> <p><i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i></p>	Form D: Qualification Form
	<p>Bidder must demonstrate the current soundness of its financial standing and indicate its prospective long-term profitability.</p> <p><i>(For JV/Consortium/Association, all Parties cumulatively should meet requirement).</i></p>	Form D: Qualification Form
Technical Evaluation	<p>The technical bids shall be evaluated as follows:</p> <p>Step 1: pass/fail basis for compliance or non-compliance with the technical specifications, warranty of all required equipment. Only bids offering all equipment meeting required specifications and warranty duration will be assessed at step 2;</p> <p>Step 2: bids passing step 1 will be evaluated based on the evaluation criteria for services identified in the bid document (section IX in the TOR). Bids achieving from 70% of technical scores are technically qualified for financial evaluation</p>	Form E: Technical Bid Form
Financial Evaluation	<p>To be conducted for bids achieving from 70% of technical scores.</p> <p>Detailed analysis of the price schedule based on requirements listed in Section 5 and quoted for by the bidders in Form F.</p> <p>Price comparison shall be based on the landed price, including transportation, insurance, customs clearance and the total cost of ownership (including installation, commissioning, training, etc.)</p> <p>Comparison with budget/internal estimates.</p>	Form F: Price Schedule Form
Award of contract	<p>Bid achieving from 70% of technical scores and offering lowest price will be selected</p>	

SECTION 5: TOR WITH EQUIPMENT AND RELATED SERVICES REQUIREMENT

TERMS OF REFERENCE

Firm/Institution/Organization

I. GENERAL INFORMATION

Project/Program title	<i>Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam</i>
Assignment	Development of community-based disaster monitoring and warning system for coastal areas
Activity Code	3.1.7.3 UN
Contract Type	Institutional contract (Consultancy firm/Lump sum contract)
Location	Hanoi and 7 provinces: Nam Dinh, Thanh Hoa, Quang Binh, Thua Thien Hue, Quang Nam, Quang Ngai, and Ca Mau.
Contract Period	Q2/2021 – Q4/2021
Report to	National Project Director of GCF Project and UNDP Senior Technical Advisor
Coordination	VNDMA (Department of Science, Technology and International Cooperation), CPMU and UNDP

II. PROJECT DESCRIPTION

Viet Nam is one of the most vulnerable countries to climate change. The Government of Viet Nam (GoV) launched significant efforts to respond to these threats, including the promulgation of the national strategy and action plan to respond to climate change, a green growth strategy and implementation plans, and legal framework and policies relating to disaster risk management.

UNDP is coordinating with the Ministry of Agriculture and Rural Development (MARD), the Ministry of Construction (MoC), the Ministry of Planning and Investment (MPI) and seven provinces (Nam Dinh, Thanh Hoa, Thua Thien Hue, Quang Ngai, Quang Binh, Quang Nam, and Ca Mau) in the implementation of the Green Climate Fund (GCF) funded project “Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam” (GCF Project) during 2017 – 2022.

Building on the government's on-going social protection program, the GCF Project is working to address housing needs for 20,000 people from poor and marginalized communities, by incorporating storm and flood-resilient housing design features in the construction of new houses. As part of an integrated response to managing flood and storm risks, 4,000 hectares of mangroves will also be rehabilitated and/or planted to function as storm surge buffers and to provide ecosystem resources that can support coastal livelihoods. Moreover, to support and sustain the impact of the GCF Project as well as future requisite government policy adjustments that strengthen the resilience of communities, resources will be used to systematize climate and economic risk assessments for private and public utilization in 28 coastal provinces in Viet Nam.

The goal of the GCF Project is to increase the resiliency of vulnerable coastal communities to the effects of climate change in Viet Nam. The specific objectives of the project are as follows:

1. **Component 1:** Storm and flood-resilient design features added to 4,000 new houses on safe sites, benefiting 20,000 poor and highly disaster-exposed people in 100 communes;
2. **Component 2:** Regeneration of 4,000 hectares of coastal mangrove storm surge buffer zones using successful evidence-based approaches;
3. **Component 3:** Increased access to enhanced climate, damage and loss data for private and public sector application in all 28 coastal provinces of Viet Nam.

The GCF Project is currently assisting MARD/VNDMA in the development of an information system and database on disaster management and climate change adaption. One of the key tasks of the Viet Nam Disaster Management Authority (VNDMA) is the implementation of GoV's Program 1002 on community-based disaster risk management (CBDRM) and capacity building of information systems for disaster early warning.

With the support of the GCF Project, in 2018 and 2019, CBDRM training courses were organized in 252 coastal and near-coastal communes, contributing to the implementation of the GoV's Program 1002. During these courses, commune authorities jointly identified disaster risk reduction solutions and action plans to strengthen disaster preparedness and response capacity. All commune CBDRM reports have identified solutions to strengthen community-based early warning capacity so that communities can be better prepared for disasters.

In addition, the Standing Office of the National Steering Committee for Natural Disaster Prevention and Control (NSCNDPC) implemented the project "Installing 08 storm monitoring sets, including surveillance cameras, wind-measuring stations and rain gauges at key sea dyke locations, to both monitor storms and boats and ships from Quang Ninh to Thanh Hoa provinces" in 2019. This pilot project proved effective during the response

to Typhoon Sinlaku in 2020, and has been highly recommended by the NSCNDPC and VNDMA leaders.

Therefore, in order to improve community-level early warning capacities, on-site early warning systems are necessary for coastal communes where CBDRM courses have been implemented.

III. OBJECTIVES AND SCOPE OF WORKS

This Terms of Reference (TOR) is formulated to support the implementation of the project “Improving the resilience of vulnerable coastal communities to climate change related impacts in Viet Nam” funded by GCF. The selected national firm will work closely with the VNDMA (MARD) and UNDP to ensure successful implementation of the assignment: **Development of community-based disaster monitoring and early warning system for coastal areas.**

3.1 Overall objective

- Strengthen disaster early warning capacity for communities;
- Develop a disaster risk database for coastal areas;
- Build disaster risk management capacity in communities; and
- Support the local Committee of Natural Disaster Prevention and Control, Search and Rescue (CNDPCSR) to make decisions related to natural disasters, evacuating communities, monitoring sea level rise during storms, etc.

3.2 Scope of work *(see more details in section 4: Requirements for implementation solutions)*

- Install community-based disaster warning systems in 24 high-risk storm communes of 7 provinces (see details in item 4.1.1 and Table 1 below) where training courses for improving CBDRM capacity were implemented in the previous phase of the Project;
- Install 24 weather stations (for measuring wind, rainfall, air temperature) and surveillance IP cameras to support the detection of warning signals for disasters caused by heavy rainfall, strong wind, gale, drought, scorching heat, damaging cold, and storm surge in river estuary and coastal areas;
- Build electronic information boards displaying real-time monitoring values and extreme weather information for local communities at CNDPCSR offices;
- Develop a software to convert data into early warning information that is easily understandable for local communities;
- Connect data with the VNDMA’s Disaster Management System (VNDMS), in order to ensure support to data transmission to VNDMA on an hourly basis (see reference document of data relevant to natural disaster prevention and control in Appendix 2);

- Develop a software on an available VNDMA's server² located at the Disaster Management Policy and Technology Center (MARD) to directly manage and download data from measuring equipment as assigned;
- Organize training 7 sessions (with estimated maximum participants of 30 persons from local SCFSP, CPC officers and local people for each training course in one day for each province) on how to test and use disaster risk reduction information, and the production of simple and easy warning messages for officials of steering committees, communes, hamlets, villages, and local communities;
- Develop tools to support the transmission of SMS messages to disaster prevention officers in disaster-affected areas; and
- Hand over the systems to the CNDPCSR for management and proactive disaster early warning operations.

IV. REQUIREMENTS FOR IMPLEMENTATION SOLUTIONS

4.1 Required implementation solutions

4.1.1 Requirement for station quantities and positions

In the frame of the Project “Installation of 08 storm-response monitoring points, including surveillance camera equipment (IP camera), wind measuring stations, rain measurement at critical sea dyke locations combined with ships and boats monitoring in the provinces from Quang Ninh to Thanh Hoa” were implemented in 2019 by the Standing Office of the CCNDPC. The installed systems are still working well. Hence, the GCF Project is expected to replicate this model in coastal communes and districts of 7 provinces: Nam Dinh (1 additional commune); Thanh Hoa (1 additional commune); Quang Binh (5 communes); Thua Thien Hue (5 communes); Quang Nam (5 communes); Quang Ngai (5 communes); and Ca Mau (2 communes).

Station locations in 24 coastal communes which have received CBDRM training under the GCF Project in 2018 and 2019:

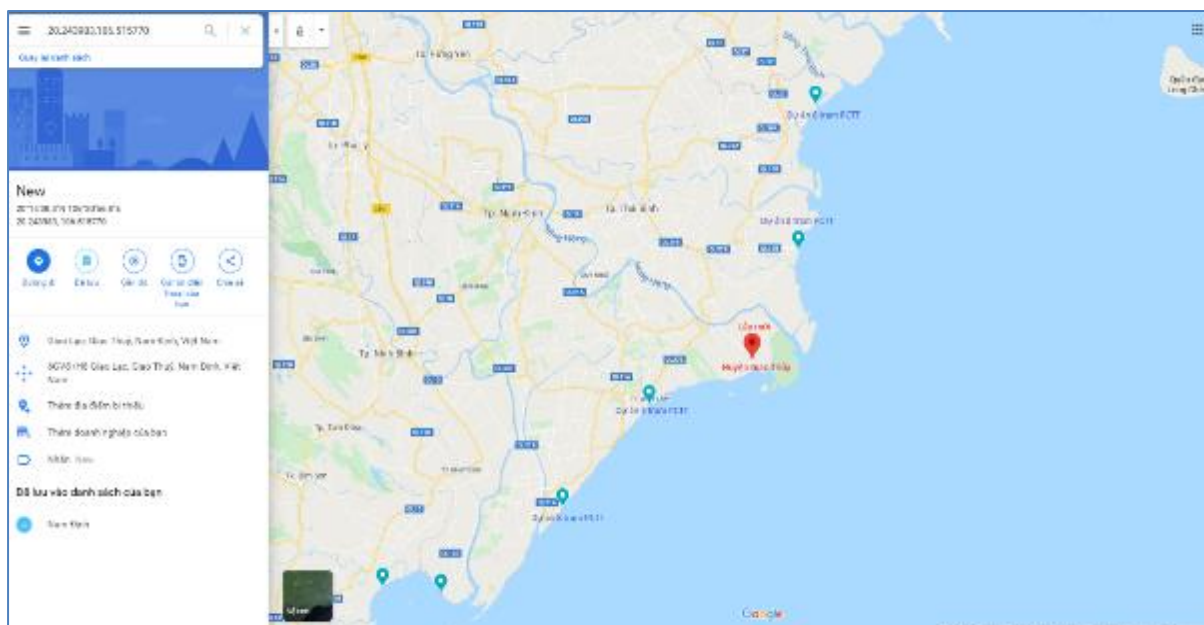
Table 1. List of stations in 7 provinces

No	Province	No of stations	District	Commune
1	Nam Dinh	1	Giao Thuy	Giao Lac
2	Thanh Hoa	1	Tinh Gia	Tinh Hai

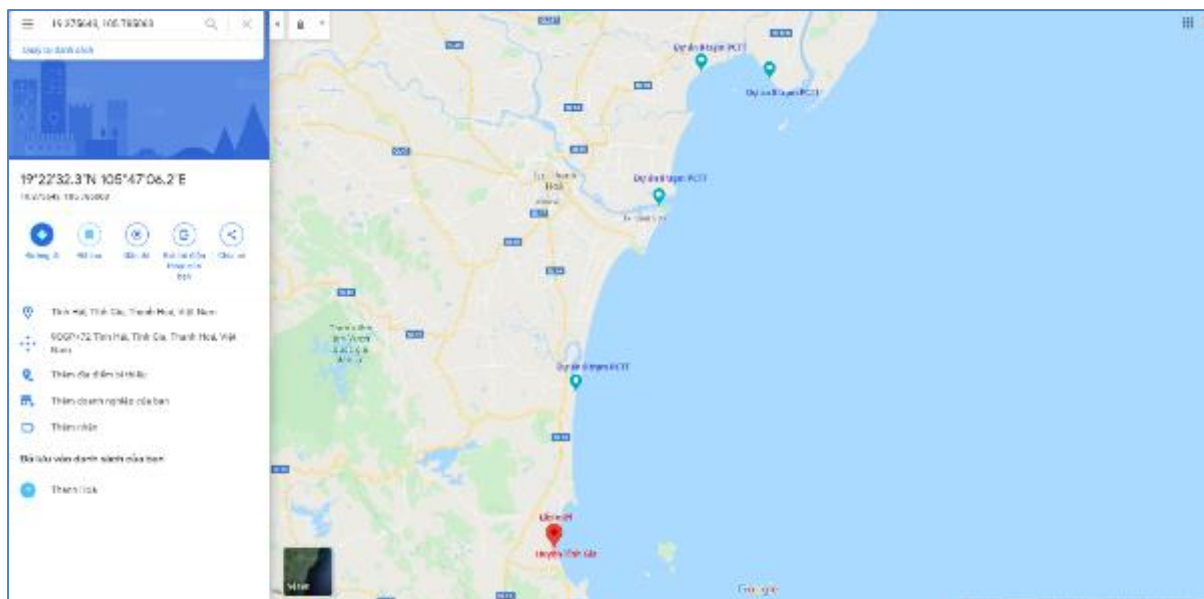
² **Dell r540:** CPU 2 x Intel® Xeon® Gold 5122 Processor 16.5M Cache, 3.60 GHz/4 x 32GB PC4-21300 ECC 2666 MHz DIMMs RAM/ 6 x 2TB Dell 7.2K RPM NLSAS 12Gbps 3.5" HDD/H730P RAID Controller Mini Mono/ Slim 8X DVD+/-RW 9.5mm Internal Drive/ Rackmount 2U/2lan

3	Quang Binh	5	Quang Trach	Quang Phu and Quang Phuc
			Bo Trach	Duc Trach and Nhon Trach
			Quang Ninh	Hai Ninh
			Le Thuy	Ngu Thuy Chung
4	Thua Thien Hue	5	Phu Loc	Dien Loc, Thuan An, Vinh Thanh, Loc Vinh, Lang Co
5	Quang Nam	5	Duy Xuyen	Hoi An city; Duy Hai
			Thang Binh	Binh Hai
			Nui Thanh	Tam Ky, Tam Quang
6	Quang Ngai	5	Binh Son	Binh Thanh and Binh Chau
			Mo Duc	Mo Duc
			Duc Pho	Pho Quang and Pho Thanh
7	Ca Mau	2	Dam Doi	Dam Doi
			Ngoc Hien	Ngoc Hien
	Total	24	15 districts	24 communes

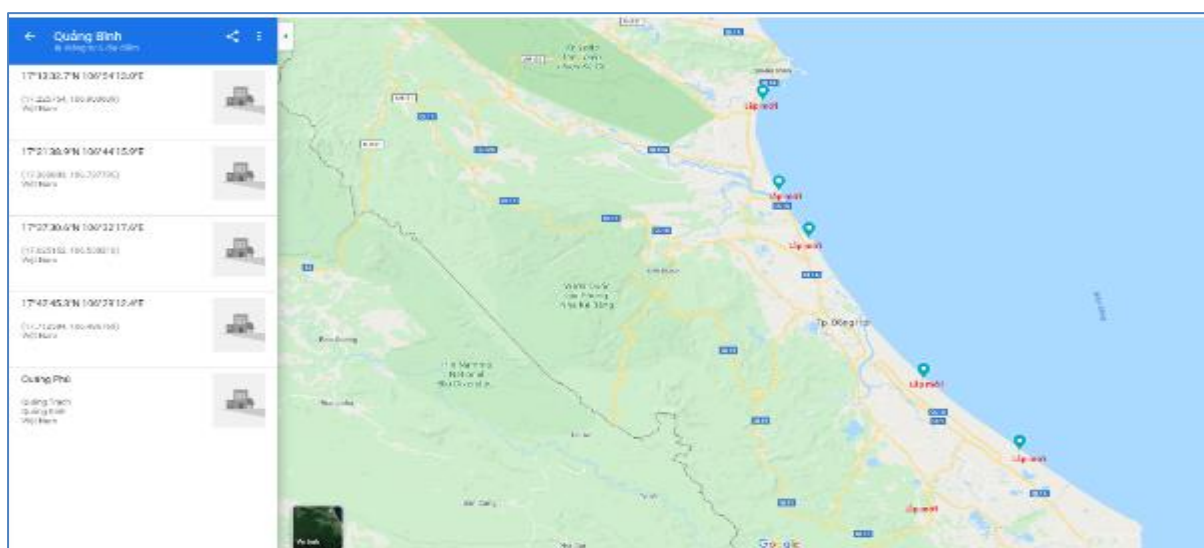
- Nam Dinh province: Giao Lac commune of Giao Thuy district;



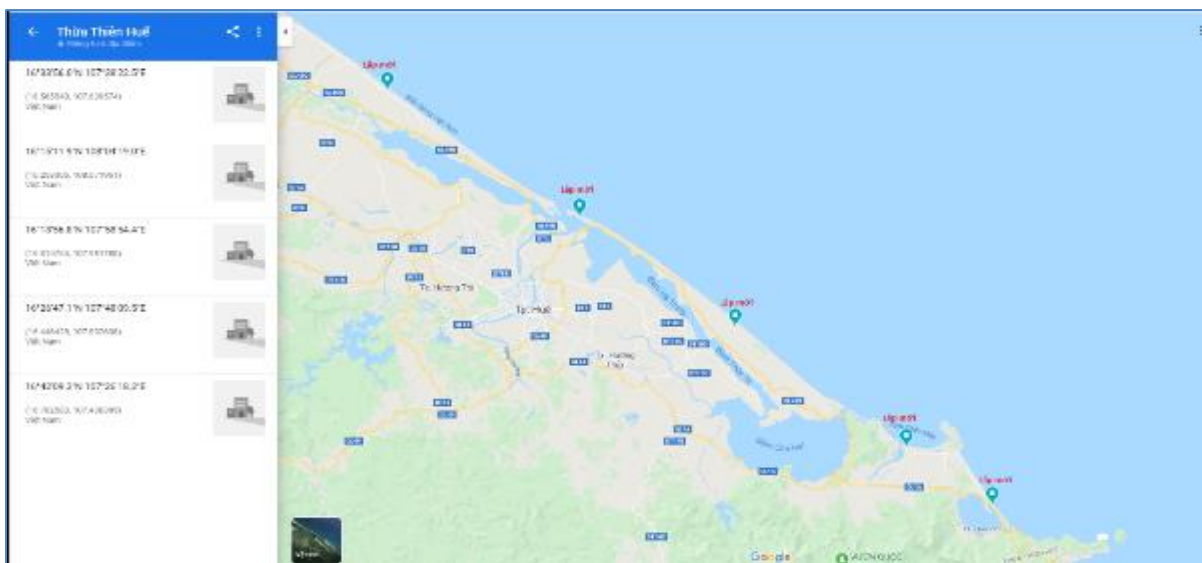
- Thanh Hoa province: Tinh Hai commune of Tinh Gia district;



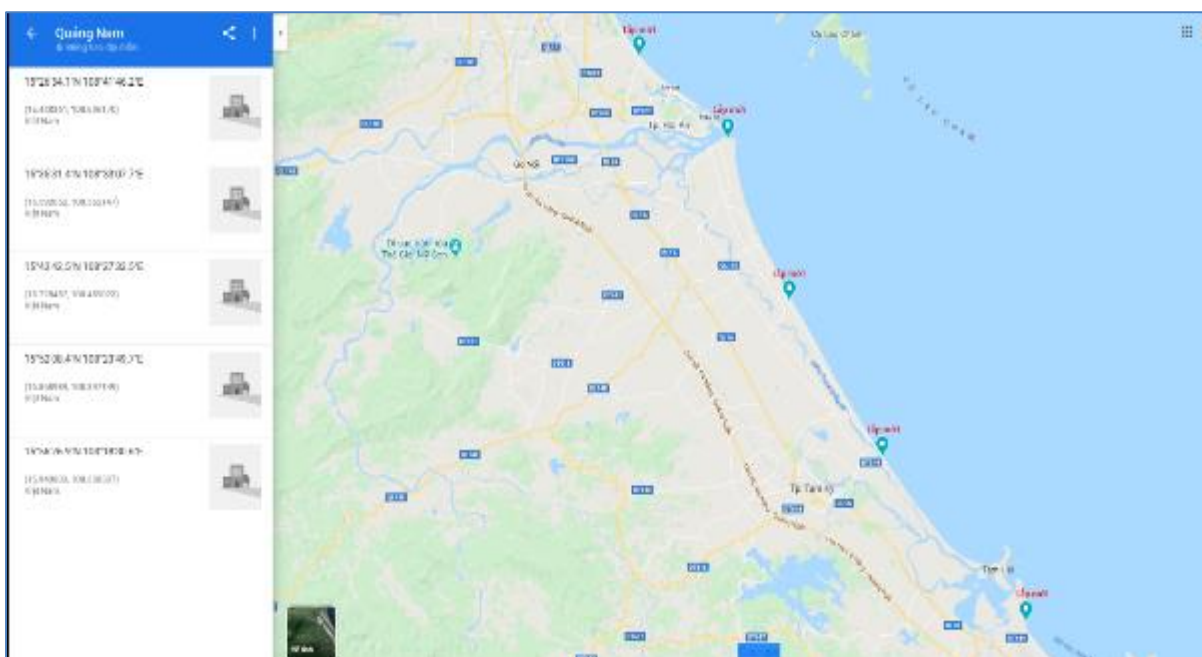
- Quang Binh province: Quang Phu and Quang Phuc communes of Quang Trach district; Duc Trach and Nhon Trach communes of Bo Trach district; Hai Ninh commune of Quang Ninh district; and Ngu Thuy Chung commune of Le Thuy district;



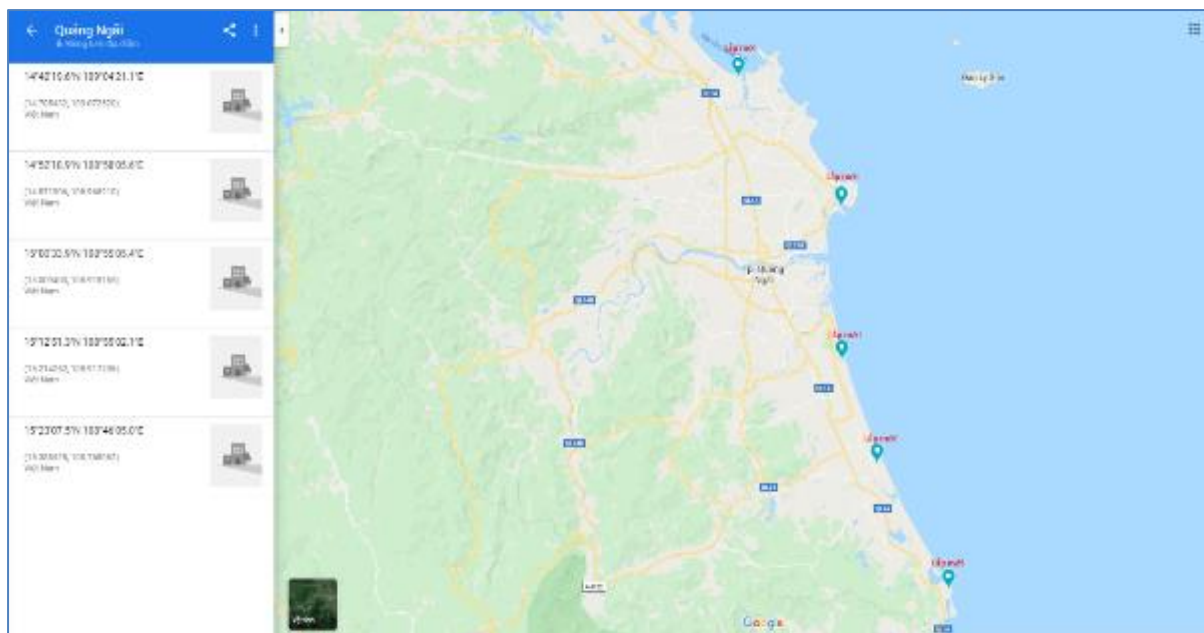
- Thua Thien Hue province: Dien Loc, Thuan An, Vinh Thanh, Loc Vinh communes, and Lang Co Town of Phu Loc district;



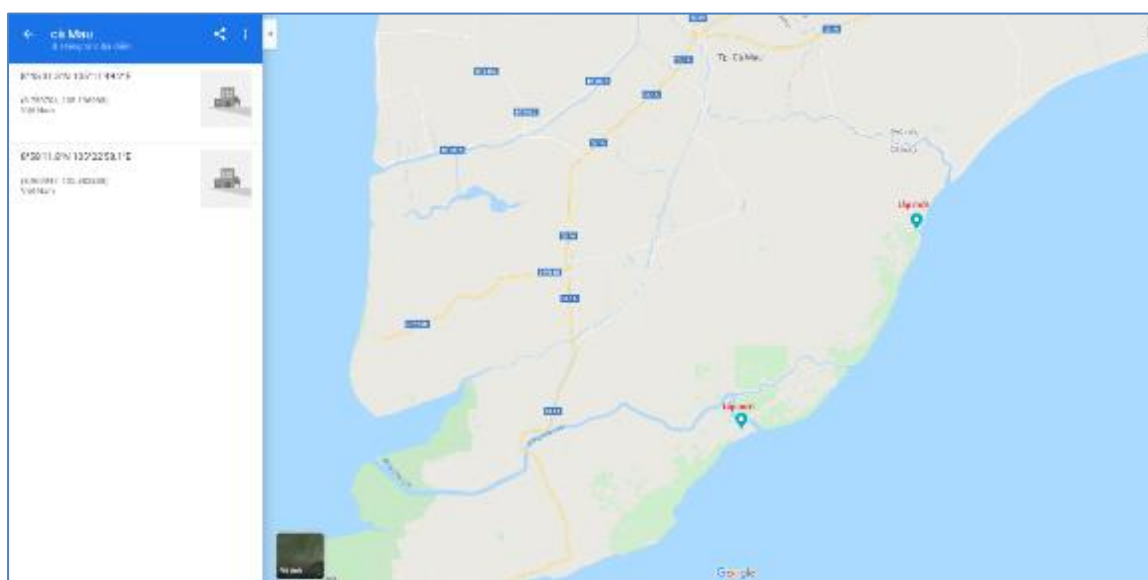
- Quang Nam province: Hoi An city; Duy Hai commune of Duy Xuyen district; Binh Hai commune of Thang Binh district; Tam Ky city; and Tam Quang commune of Nui Thanh district;



- Quang Ngai province: Binh Thanh and Binh Chau communes of Binh Son district; Mo Duc district; and Pho Quang and Pho Thanh communes of Duc Pho district;



- Ca Mau province: Dam Doi district; Ngoc Hien district;



4.1.2 Implementation model

The management data model for 24 disaster warning stations is displayed in the Figure 1 and 2 below:

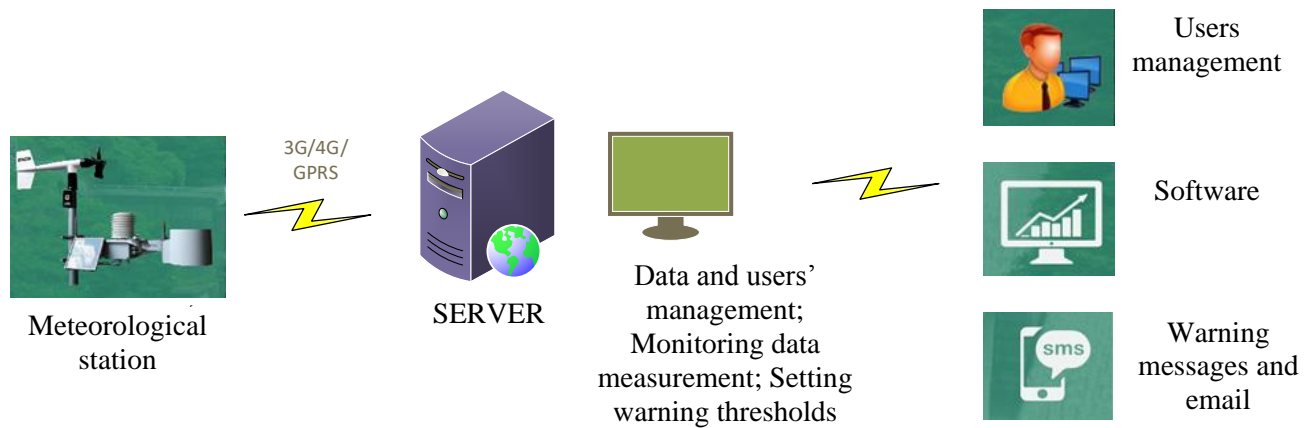


Fig. 1: Monitoring station connection diagram.

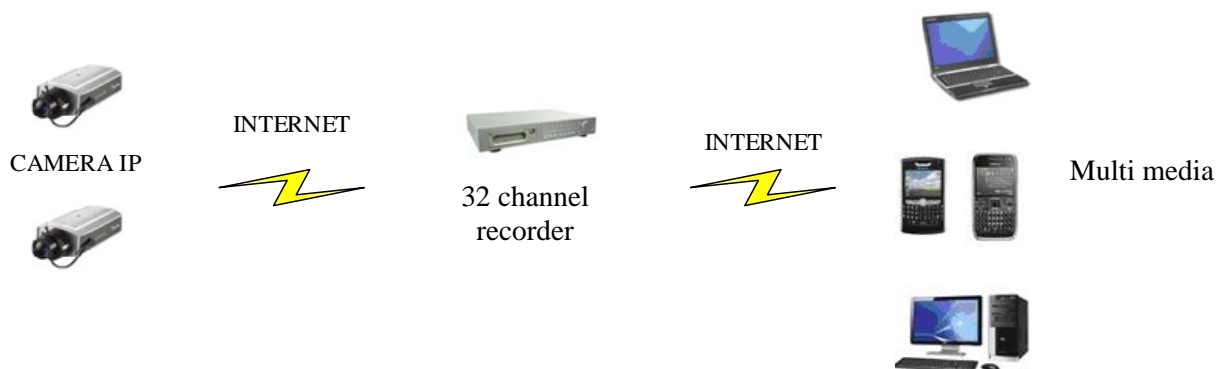


Fig. 2: Monitoring IP camera connection diagram.

4.1.3 Requirements for warning stations

4.1.3.1. Requirements for hardware

a) General requirements

- The equipment used for the stations must be brand new, modern, have advanced technology, high accuracy, and good durability, be widely used in Vietnam, be of reasonable price, and meet the technical requirements defined above. Further, it should be convenient for repair, and have a warranty and maintenance for two years in accordance with the climatic conditions at the place where the equipment is installed.
- The IP cameras should be set up depending on the technical requirements of the Project, convenient for repair, and maintained for two years in accordance with Vietnamese conditions.
- Automatic wind, rain and air temperature monitoring devices: The monitoring station includes equipment for measuring rain, wind speed, wind direction, and air temperature. It prefers that this monitoring station uses solar energy which is convenient for deployment and installation in all terrain conditions. The wind sensor is mounted on the pole at a height of > 10m.
- Automatic sensors for measuring wind, rain and air temperature must comply with standards used by the Vietnam Meteorological and Hydrological Administration

(VMHA) (see circular No. 30/2018 / TT-BTNMT dated 26 December, 2018 of MONRE about technical regulations on monitoring and providing hydro-meteorological information and data for specialized use hydro-meteorological stations).

b) Specific hardware requirement of the system

1. **24 hydro-meteorological stations** (includes of datalogger, modem 3G for data transmission) measuring the following parameters: rainfall, wind direction, wind speed, air temperature; The technical parameter requirements for measuring devices of rainfall, wind direction, wind speed, air temperature is displayed in Table 2. All mentioned devices must be required 2-year warranty.

Table 2. The technical parameter requirements for measuring devices of rainfall, wind direction, wind speed, air temperature.

No	Device	Technical parameters
1	Wind	<p>Device measuring and storing data for at least 2 seconds/1 time with 2-year warranty.</p> <p><i>a. Wind speed</i></p> <ul style="list-style-type: none"> - Unit: meter / second (m/s) - Range: (0, 60) m/s applies to deltas and coastal areas - Resolution: 0.5 m/s. - Accuracy: ± 0.5 m/s with speed ≤ 5 m/s; 10% with speed > 5 m/s. <p><i>b. Wind direction</i></p> <ul style="list-style-type: none"> - Unit: $^{\circ}$ (degree). - Range: (0, 360)$^{\circ}$. - Resolution: 1$^{\circ}$. - Accuracy: $\pm 5^{\circ}$.
2	Air temperature	<ul style="list-style-type: none"> - Unit: $^{\circ}\text{C}$. - Range: -10 $^{\circ}\text{C}$, +50 $^{\circ}\text{C}$. - Resolution: 0.1 $^{\circ}\text{C}$. - Accuracy: ± 0.3 $^{\circ}\text{C}$ - 2-year warranty
3	Rainfall	<ul style="list-style-type: none"> - Unit: mm. - Rainfall density: (0, 4) mm/minute. - Resolution: 0.2 mm. - Accuracy: ± 0.4 mm with rainfall ≤ 10 mm; 4 % with rainfall > 10 mm. - 2-year warranty

2. **24 IP cameras** providing scenes of real-time and abnormal weather phenomena such as estuarine or coastal water level rise, and at critical points at critical sea dyke locations combined with monitoring of ships in the above-mentioned communes; The technical requirements for IP camera is listed in Table 3 below and the devices must be required 2-year warranty.

Table 3. The technical requirements for IP camera.

No	Instrument	Technical parameters
1	IP camera	<ul style="list-style-type: none"> - InfraRed camera - Resolution: 2.0 Megapixel. - Optical zoom 31x, digital zoom 16x. - Image compression standard: H.264 & MJPEG. - Supports light balance, back light compensation, autofocus, and Infrared Cut Filter Removal (ICR) function for day/night sensor. - Supports multiple access at the same time for up to 20 users. - 2-year warranty

3. **01 32-channel recorder device** (32 channel recorder allowing to record from cameras; to supports IP Cameras up to 12MP; 70TB ÷ 80TB HDD capacity (Available separately); H.265+/H.265/H.264+/H.264/MPEG-4 Codecs; 2-year warranty) to store all camera data at installation points. The device is located in DMPTC (MARD);
4. **24 electronic boards** displaying all institutional measurement information to help local communities easily access visual information (24 communes). The system is connected to a signal light, which remains green unless the measured value exceeds the threshold at which point the light turns red. The electronic board will be set up at CPC or CNDPCSR office; The electronic board specification is Optimal distance > 10m; Electricity input 220V AC; Available USB/WIFI; Outdoor working condition. They have 2-year warranty;
5. **22 electronic boards/monitors** (specification and warranty are similar to #4) to be installed at the district and provincial levels (PPC or other relevant offices) to allow district and provincial authorities to receive first-hand information from the system: total of 7 provinces & 15 districts (see Table 1).

4.1.3.2. Requirements for software

a) Develop a software in an available VNDMA's server to manage measurement information from stations with the following main features:

1. A location map of measuring stations;
2. An interface to display and control the data storage to the VNDMA's server, allowing functions such as: setting the number of automatic data retention times; storing data according to a certain time schedule; and scheduling stored data. These settings should be built in an open and easily customizable manner;
3. Data query functions, allowing users to easily search and filter historical data according to certain parameters;

4. Warning information from the actual measured data according to the set of standard thresholds defined and updated by the management staff of the VNDMA (the extreme weather warning thresholds should be based on Viet Nam technical standards, including criteria of actual rainfall, cumulative rainfall, normal wind speed, and gust speed);
5. Administrator capacity to send alarm messages in many different channels (Email, SMS, OTT such as Zalo, Telegr, etc.) based on the established conditions;
6. Capacities of integrating the list of users at the affected points, in order to transmit information in the timeliest manner;
7. Readiness to integrate online data with the VNDMS;
8. Capacities for sharing the hydro-meteorological data (wind, rainfall, air temperature) of installed stations with specialized forecasting organizations in order to get more accurate predictions for the direction of storms, levels of scorching heat, and extreme damaging cold;
9. Support to warning information for localities and communities affected by natural disasters via software alerts or SMS;
10. An output data structure consistent with the VMHA's common monitoring database system of hydro-meteorological data and interactable with VNDMA (see reference of data relevant to natural disaster prevention and control in Appendix 2);
11. Design that is compatible with e-government architecture (shared service: user authentication service, etc.);
12. Software will use pictures of 24 IP cameras as an input data for monitoring water levels, coastal erosion, estuarine floods, and coastal floods; the software should support automatic reading of water level and transmission of both images and water level data to the VNDMA system;

b) Build 01 WEBGIS website to display real-time measured information and warnings in a visually appealing way. The WEBGIS needs to be simple, have a user-friendly design, be easy to use, and work on both Android and IOS operating systems.

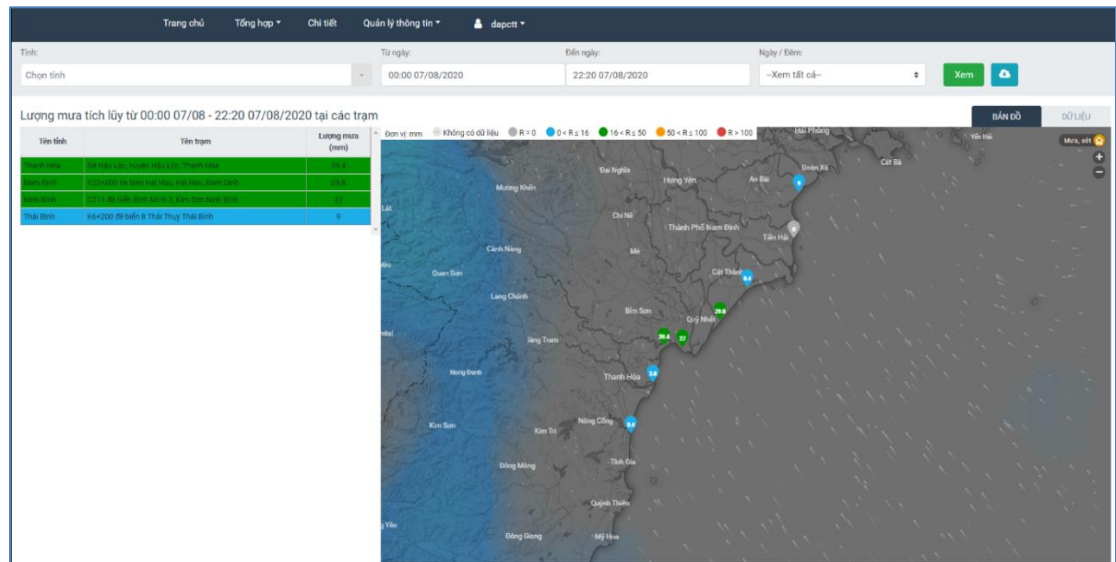
c) Tools to communicate via SMS to people in disaster-affected areas:

- When there is information about extreme weather, the system should provide tools to send messages to communities about potential dangers and recommendations on disaster prevention for those in the affected area
- A pilot should be developed to evaluate the effectiveness of the communications about disaster prevention in communities through SMS communication tools

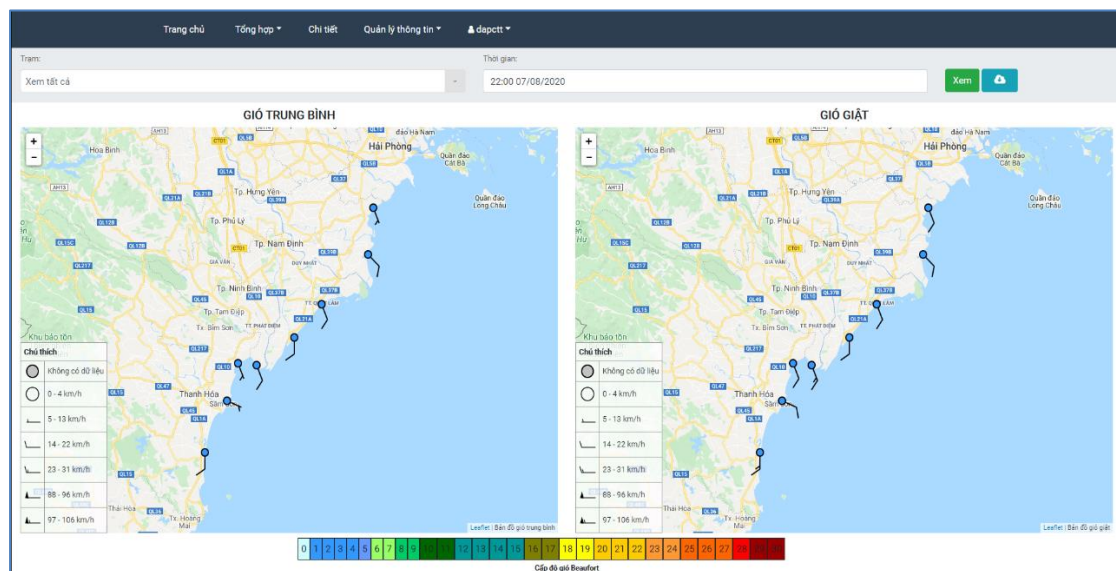
4.1.3.3. Requirements for output information

1. The measurement information at each of the 24 stations should be completely consistent and integratable with VNDMS as input for the existing data management and display software of the VNDMA. In order to ensure that VNDMA's existing software functions work well, some illustrations of existing software functions of the VNDMA are shown below:

- Rain gauge data table and station installation location map:



- Average wind and wind gust maps:



- Warning management interface:

The interface shows a table for warning conditions with the following data:

STT	VỊ TRÍ CẢNH BÁO	ĐIỀU KIỆN CẢNH BÁO	NHÓM NHÂN
1	Tin nhận - email	lượng mưa dự báo 24h > 0.1 mm	
2	Tin nhận - email	lượng mưa 24h qua > 0.1 mm	
3	Tin nhận - email	lượng mưa hiện tại > 0.1 mm	

Below the table, there is a section for recently sent messages with the following data:

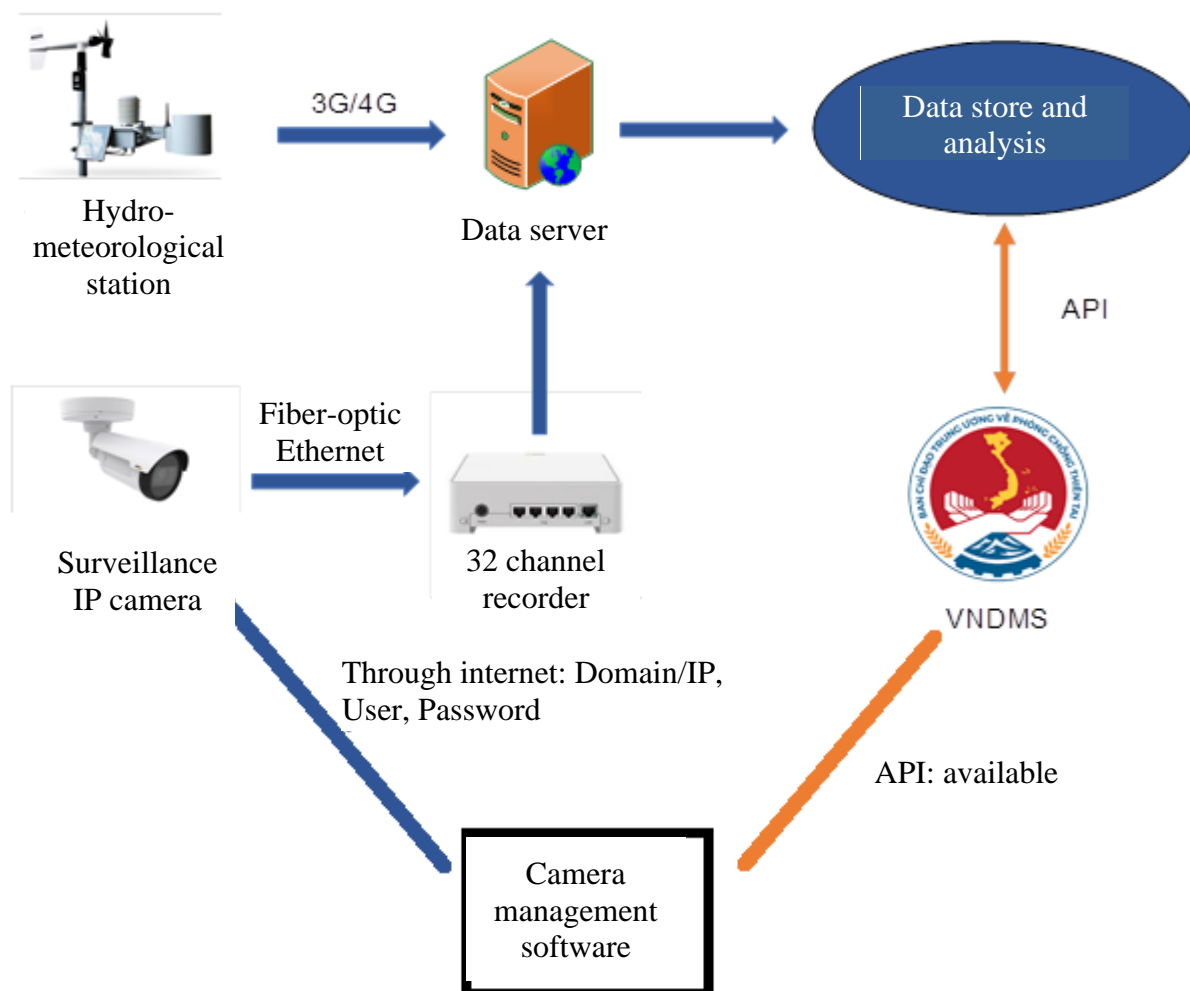
STT	Thời gian	Nội dung	Người nhận tin	Loại tin
Không tìm thấy dòng nào phù hợp				

- Feature to export data reports:

The table displays rainfall data for 24 stations. The columns include: Tên tỉnh, Tên trạm, Lượng mưa (mm), Mã trạm, Tên trạm, Tỉnh, Tổng, and a series of columns for specific dates and times (01:00, 02:00, 03:00, 04:00, 05:00, 06:00, 07:00, 08:00, 09:00).

Tên tỉnh	Tên trạm	Lượng mưa (mm)	Mã trạm	Tên trạm	Tỉnh	Tổng	01:00 09/08/2020	02:00 09/08/2020	03:00 09/08/2020	04:00 09/08/2020	05:00 09/08/2020	06:00 09/08/2020	07:00 09/08/2020	08:00 09/08/2020	09:00 09/08/2020
Hà Giang	Hà Giang - Vi Xuyên - Thuy Điện Nam Ngạn	111.4	01206194	Hà Giang - Vi Xuyên - Thuy Điện Nam Ngạn	Hà Giang	111.4	33	0.2	71.8	5.6	0.8	0	0	0	0
Lai Châu	Mù Cạ - Mường Tè - Lai Châu	48	665264	Mù Cạ (Mường Tè, Lai Châu)	Lai Châu	48	0	0.6	11	6.2	0.2	11.6	8.6	0	0
Hòa Bình	Hòa Bình - Cao Phong - TT Cao Phong - Tông Hóp	28.8	00204571	Hòa Bình - Cao Phong - TT Cao Phong - Tông Hóp	Hòa Bình	28.8	0	0	0	0	0	0	0	0	0
Lào Cai	Lào Cai - Sapa - Sapa - Sapa - Sapa	1.4	00203652	Dak Lak - Krong Nang	Đắk Lắk	28.4	0	0	0	0	0	0	0	0	0
Hà Giang	Hà Giang - Việt Quang - Dap Thuy Điện Sông Bắc	24.8	01206204	Hà Giang - Việt Quang - Dap Thuy Điện Sông Bắc	Hà Giang	24.8	1	20.4	3.2	0	0	0.2	0	0	0
Lai Châu	Nậm Hàng 1 (Nậm Hàng, Lai Châu)	23.6	531519	Nậm Hàng 1 (Nậm Hàng, Lai Châu)	Lai Châu	23.6	11.4	12	0.2	0	0	0	0	0	0
Quảng Nam	Quảng Nam - Đông Giang - Xã Pháo	21.4	01206190	Quảng Nam - Đông Giang - Xã Pháo	Quảng Nam	21.4	0	0	0	0	0	0	0	0	0
Hà Giang	Hà Giang - Vi Xuyên - Thuy Điện Nam Ngạn	18.8	01206199	Hà Giang - Vi Xuyên - Thuy Điện Nam Ngạn	Hà Giang	18.8	1.2	0.2	5.8	11.4	0.2	0	0	0	0

- The measured data at each of the 24 stations needs to be integrated into VNDMS as per the connection and operation diagram shown below:



The VNDMS system will receive data from the GCF Project's data storage and analysis system through a standard API connection via LGSP framework of MARD. Monitoring data and the camera system from surveillance stations will be collected into site-processing unit and video feed will be sent for common display in the VNDMS video system using required video streaming protocol (RTSP). The Standing Office of the CCNDPC will use data from the VNDMS system (after integrating GCF Project data) in disaster response operations in the event of extreme weather phenomena.

4.2 Implementation contents

The steps to deploy the implementation work are as follows:

a) Preparation phase

- **Step 1:** Work with stakeholders (UNDP, VNDMA, supervision consultant team) to clarify the contents of the terms and conditions for the installation of disaster warning stations.
- **Step 2:** Coordinate with VNDMA to develop a working schedule with disaster prevention and control management leaders in the provinces, districts and communes where the warning stations are expected to be installed. On that basis, develop a survey

plan with location selection for specific monitoring station installation.

- **Step 3:** Coordinate with UNDP, VNDMA, supervision consultants, and local SCFSPs in the process of conducting the survey and selecting locations for the installation of disaster warning stations. Obtain a general consensus on potential installation locations.
- **Step 4:** Develop a detailed survey report and implementation plan to submit to UNDP, VNDMA, for approval.
- **Step 5:** Make a plan for buying materials and equipment for the construction work:
 - + *Main equipment:* procure equipment for wind and rain monitoring stations, surveillance IP cameras, temperature sensors and related accessories as listed above.
 - + *Key materials for construction and installation:* are 24 concrete/steel poles (vertical, fixed, sturdy, resistant to all wind levels; height from 10m to 12m); fiber-optic cables, electricity lines from input internet or electricity points to station locations.
 - + *Other materials for construction and installation:* Bearing rope, AMP Cat6 line, tightening belt, electrical tape, and other auxiliary materials.
- **Step 6:** verify monitoring equipment according to Vietnamese standards before being deployed in the site by supervision team. The contractor is required to obtain the origin certificates of equipment and stamp of Vietnamese equipment standardization and then obtain the agreement with UNDP supervision team.

b) Implementation phase

- **Step 1:** Clear site for construction.
- **Step 2:** Deploy the construction and erection of pillars supporting important equipment.
- **Step 3:** Install monitoring stations and cameras. Connect electrical infrastructure and internet to the camera.
- **Step 4:** Connect and test.
- **Step 5:** Perform acceptance and handover. The document of acceptance and handover with contents related to the equipment quality and quantity as approved implementation plan will be agreed by UNDP supervision team.

c) Training and transfer to local authorities

- **Step 1:** Organize 7 one-day training courses for each province on introduction and transfer of use (with estimated maximum participants of 30 persons from local SCFSP, CPC officers and local people for each training course).
- **Step 2:** Develop a periodic equipment inspection plan (annually), and an equipment maintenance plan (every 6 months). The plans should include estimates for human needs and funding. During the warrantee period of system (at least two years), the contractor has to implement maintenance and operation regularly to ensure that the system will work well for every disaster event.
- **Step 3:** Hand over to the local SCFSP for management and supervision.

V. EXPECTED OUTPUTS/DELIVERABLES/PRODUCTS

- Plan for implementing the tasks;

- Report on the detailed survey of station installation location, overall design of the assignment, and the work of procurement and installation of the warning station system;
- Report on software development;
- User manual of the early warning system in both Vietnamese and English languages;
- Report on the training results, instructing communities on system use; and
- Completion report including results for detailed survey of station installation location; work of procurement and installation of the warning station system; software development; manual for the early warning system; training results, instructions for communities on system use; etc. (approved by the VNDMA and UNDP).

VI. CONTRACT DURATION AND IMPLEMENTATION ARRANGEMENTS

The contract implementation duration is from late Q2/2021 to Q4/2021.

The implementation site is described in Section 4.1.1. “Requirement for station quantities and positions”.

- The consultancy firm will be paid in phases as follows, after assignment products are approved by the VNDMA/CPMU and UNDP.
- The costs of the consultancy firm for performing the assignment under the TOR are subject to the UN-EU Guidelines for Financing of Local Costs in Development Cooperation with Viet Nam, Version 2017 (UN-EU cost norm 2017).

<ul style="list-style-type: none"> • Report of completion of the installation of monitoring stations and cameras; <ul style="list-style-type: none"> ○ Three months after survey completed 	
<ul style="list-style-type: none"> • Report on software development; • User manual of early warning system • Report on the training results, instructing communities on system use <ul style="list-style-type: none"> ○ Two months after completion of EWS installation 	20%
Phase 3: Completion report (approved by VNDMA Control and UNDP) <ul style="list-style-type: none"> ○ Two months after completion of EWS installation 	10%
<ul style="list-style-type: none"> ○ After completion of two year warranty period 	10%
Total	100%

VIII. QUALIFICATION REQUIREMENTS

8.1 Capacity and experience of the consultancy firm

- The consultancy firm can be an independent national firm or enter a joint venture to meet the requirements of the bidding package (referred to as National Consultancy Firm).
- Legal basis: the consultancy firm should legally allow to provide this service under relevant laws of Viet Nam.
- The consultancy firm should have at least 5 years of experience in the field related to hydro-meteorology and natural disaster prevention.
- The consultancy firm should have a team of experts to meet the requirements of the bidding package, and implement a quality assurance process to control product quality.
- The consultancy firm should display a commitment to ensure warranty service, and support equipment maintenance during the system operation.
- The consultancy firm should have experience in information integration with the VNDMS system.

8.2 Personnel requirements for the consultancy firm

The consultancy firm must have a team of key experts in the fields of:

- Natural disaster prevention, meteorology, hydrology, and marine management;
- Hydro-meteorological monitoring technology and equipment, natural disaster prevention and control;
- Development/application of disaster forecasting and warning software;

- Building databases, sharing information and data, transmitting monitoring data, supervising monitoring information in real-time; and
- Surveying and designing civil, irrigation, hydro-meteorological and marine works.

8.3 Key position requirements

No	Position	Requirements
1	01 National Team leader	<p>Qualification: Master or higher, graduated from hydro-meteorology, disaster management schools or with relevant majors.</p> <p>Capacity: Good knowledge about natural disaster forecasting and warning systems, hydro-meteorological and marine management systems.</p> <p>Experience:</p> <ul style="list-style-type: none"> - At least 10 years of experience working in the fields related to hydro-meteorology, natural disaster prevention, and experience directing the implementation of at least 1 similar project/package. - Can exchange and work with experts and staff of UNDP.
2	01 National Information technology expert	<p>Qualification: Master, graduated from IT training schools or related majors.</p> <p>Capacity: Good knowledge about information technology, the ability to apply knowledge of IT to build databases, and the ability to receive and share information data on meteorology and hydrology.</p> <p>Experience: At least 5 years of work experience participating in at least 1 similar project/package on database construction and at least 1 project/contract on similar IT systems.</p>
3	01 National Monitoring/ Forecasting hydro-meteorology	<p>Qualification: Master in meteorology and hydrology.</p> <p>Experience:</p> <ul style="list-style-type: none"> - Minimum of 10 years of work experience in hydro-meteorological monitoring/forecasting or disaster prevention. - A professional record to prove work experience in hydro-meteorological forecast/monitoring projects. - Recent practical experience in similar projects in Viet Nam is seen as an advantage.
4	01 National Electronics Telecommunication expert	<p>Qualification: Engineer/Bachelor degree in ICT, electronics and telecommunications, or similar fields.</p> <p>Experience: At least 5 years of working experience in hydrometeorology and recent practical experience in similar</p>

No	Position	Requirements
		projects in Viet Nam.
5	01 National Training expert	Qualifications: Engineer/Bachelor or higher in the fields related to meteorology, hydrology, irrigation, and/or disaster prevention. Experience: 8 years of experience in capacity building training in at least 3 related projects of a similar size.
Total number for key experts expected: 05		

IX. EVALUATION CRITERIA

The following criteria will be required for the firm to undertake the assignment

Form 1: Overall firm competencies		Points	What to submit
1.1	5 years of experience in the field related to hydro-meteorology management and in building meteorology stations. -5 years' experience: 70 points - each one more year experience adding 10 points to maximum 30 points	100	Business license
1.2	Having good record of relevant experience in implementation of at least 2 similar projects/packages - 2 similar projects: 90 points - Each one more additional project adding 10 points to maximum 30 points	120	List of similar contracts
1.3	Having implemented VNDMA's projects related to the application of information technology and software is an advantage with good performance.	5	Contracts and service performance assessment from clients
1.4	Quality assurance procedures	20	Quality assurance procedures
Total Form 1		250	

Form 2- Technical Proposal		Points	What to submit
2.1	Extent to which the Offeror understands the tasks and expected deliverables/outcomes of the ToR.	70	Explanation on understanding
2.2	The suggested work plan sufficiently address the tasks/responsibilities expressed in the ToR.	100	Detailed Workplan

Form 2- Technical Proposal		Points	What to submit
2.3	The suggested methodologies/approaches outlined sufficient and appropriate to address the needs/demands of the ToR.	80	Methodology/ approaches
Total Form 2		250	

Form 3- Team Composition		Points	What to submit
3.1	National Team leader, Expert on Climate Change Education and Awareness:	150	CV
	Master or higher, graduated from hydro-meteorology, disaster management schools or with relevant majority. Master: 30 Higher Degree: 40	40	Certificate
	10 years of experience working in the fields related to hydro-meteorology, disaster management Experience in implementation of at least 1 similar project/package.	60	CV
	Proven to be able to work in English with experts and staff of UNDP.	20	2 writing reports or contracts to work with international organizations
	Proven Experience in providing training courses on hydro-meteorology, disaster management for technical staff and community.	30	CV
3.2	National Information technology expert	100	CV
	Master, graduated from IT training schools or related majors.	30	Certificate
	5 years of work experience in Information technology,	40	CV
	Having experience in at least 1 similar project/package on database construction	15	
	Having experience in at least 1 project/contract on similar IT systems.	15	CV
3.3	National Monitoring/ Forecasting hydro-meteorology expert	100	CV
	Master in meteorology and hydrology.	40	certificate
	10 years of work experience in hydro-meteorological monitoring/forecasting or disaster prevention.	50	CV

Form 3- Team Composition		Points	What to submit
	Recent practical experience in similar projects is an advantage.	10	
3.4	National Electronics - Telecommunication expert	50	CV
	Engineer/Bachelor degree in ICT, electronics and telecommunications.	20	certificate
	5 years of working experience in hydrometeorology	20	CV
	Practical experience in similar projects.	10	CV
3.5	National Training expert	100	CV
	Engineer/Bachelor or higher in the fields related to training, meteorology, hydrology, irrigation, and/or disaster management. - Engineer: 25 - Higher degree: 30	30	certificate
	At least 5 years of experience in capacity building training.	50	CV
	Working experience in at least 3 related or similar projects	20	CV
	Total Form 3	500	
	TOTAL	1,000	

X. PROVISION OF MONITORING AND PROGRESS CONTROLS

Project documents (including relevant reports) will be provided to the contractor at the beginning of the assignment.

UNDP will support the contractor to arrange the schedule with related government agencies when going on field trip.

UNDP will send a supervisory consultancy team to join the fieldwork with the implementation contractor for developing detailed survey report.

During implementation, UNDP will send a supervisory consultancy team to assess the implementation progress, including: 1) Ensuring the purchase of the appropriate type and quality of the equipment, in line with the specifications provided in the ToR; 2) Ensuring that the appropriate processes are followed during the implementation of the contract, as described in the ToR and proposal of the contractor; and 2) Ensuring the quality of construction and installation of equipment at the appropriate locations, in accordance with technical safety and standards supporting stable and long-term operation.

The supervisory consultancy team will also supervise the contractor during the 7 training courses on introduction and transfer of equipment.

All the progress reports of the contractor will be reviewed by VNDMA and UNDP.

During the 2-year maintenance period, UNDP will coordinate with VNDMA to ensure that the quality of the service provided are in line with the requirements of the ToR and proposal of the contractor, the system is working well and maintenance is provided by the contractor.

APPENDIX 1- LIST OF ACRONYMS

CBDRM	Community-Based Disaster Risk Management
CCNDPC	Central Committee of Natural Disaster Prevention and Control
CNDPCSR	Committee of Natural Disaster Prevention and Control, Search and Rescue
CPMU	Central Project Management Unit
DMPTC	Disaster Management Policy and Technology Center
GCF	Green Climate Fund
GoV	Government of Viet Nam
LGSP	Local Government Service Platform
MARD	Ministry of Agriculture and Rural Development
MoC	Ministry of Construction
NSCNDPC	National Steering Committee for Natural Disaster Prevention and Control
TOR	Terms of Reference
UNDP	United Nations Development Programme
VMHA	Vietnam Meteorological and Hydrological Administration
VNDMA	Vietnam Disaster Management Authority
VNDMS	Vietnam Disaster Management System

APPENDIX 2- STANDARDIZING DATA SUPPORTING FOR DISASTER MANAGEMNE AND CONTROL

TT	Data group	Data	Group 2	Data type	DATA FORMAT					Products provided (minimum requirements to be met)	Note
					Unit	Data format	Protocol	Data transition duration	Data transition mode		
I	Meteorological and hydrological information, data										
	Meteorological and hydrological data	Monitoring rainfall		Decimal	mm	CSV	FTP	At 1h, 7h, 13h, 19h	FTP server	CSV table composes of fields: Station name, station code, monitoring data	Measure manually
				Decimal	mm	CSV	FTP	1h/a time	FTP server or RESTful API	CSV table composes of fields: Station name, station code, monitoring data	Measure automatically or manually
				Decimal	mm		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
		Monitoring water level		Decimal	mm	CSV	FTP	At 1h, 7h, 13h, 19h	FTP server	CSV table composes of fields: Station name, station code, monitoring data	Measure manually
				Decimal	mm	CSV	FTP	1h/ a time	FTP server or RESTful API	CSV table composes of fields: Station name, station code, monitoring data	Measure automatically or manually
				Decimal	mm		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
		Monitoring water volume		Decimal	m3/s		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
		Monitoring wind	Wind speed	Decimal	km/h	CSV	FTP	1h/ a time	FTP server or RESTful API	CSV table composes of fields: Station name, station code, monitoring data	Measure automatically or manually
			Wind speed	Decimal	km/h		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
			Wind direction	Character	Degree or compass direction		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
		Monitoring temperature		Decimal	°C		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
	Salinity monitoring data	Monitoring salinity		Decimal	‰		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
	Seismic monitoring data	Monitoring seismic		Decimal	Richter		HTTP, HTTPS	1h/ a time	FTP server or RESTful API		Measure automatically
II	Information and data on hydroelectric or irrigation reservoirs										
<i>I</i>	<i>Hydroelectric reservoirs</i>										
		Upstream water level		Decimal	m		HTTP, HTTPS	1h/ a time	API		Monitoring data/ dynamic data
		Downstream water level		Decimal	m		HTTP, HTTPS	1h/ a time	API		Monitoring data/ dynamic data
		Input flow to		Decimal	m3/s		HTTP,	1h/ a time	API		Monitoring data/

		the lake					HTTPS				dynamic data
		Discharge from the lake		Decimal	m3/s		HTTP, HTTPS	1h/ a time	API		Monitoring data/ dynamic data
		Number of bottom outlets open		Decimal	Item		HTTP, HTTPS	1h/ a time	API		Monitoring data/ dynamic data
		Number of front outlets open		Integer	Item		HTTP, HTTPS	1h/ a time	API		Monitoring data/ dynamic data
		Current capacity		Decimal	Million m3			1h/ a time			Calculated from the characteristic curve of reservoir Q-H / or imported
		Reinforced water level		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Normal rising water level		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Dead water level		Integer	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Number of front outlets		Integer	Item	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Number of bottom outlets		Integer	Item	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Length of the dam		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Dam height		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Total capacity		Decimal	Million m3	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
2	<i>Irrigation reservoir</i>										
		Upstream water level		Decimal	m		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data
		Downstream water level		Decimal	m		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data
		Input flow to the lake		Decimal	m3/s		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data
		Discharge from the lake		Decimal	m3/s		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data
		Number of front outlets open		Integer	Item		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data
		Number of bottom outlets		Integer	Item		HTTP, HTTPS	1h/ a time	API		Monitoring data/dynamic data

		open									
		Current capacity		Decimal	Million m3			1h/ a time			Calculated from the characteristic curve of reservoir Q-H / or imported
		Reinforced water level		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Normal rising water level		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Dead water level		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Number of front outlets		Integer	Item	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Number of bottom outlets		Integer	Item	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Length of the dam		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Dam height		Decimal	m	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
		Total capacity		Decimal	Million m3	CSV		When there is a change	FTP or sending file		Technical specifications/ Static data
III	Information, data for river and coastal dyke management										
I	3- level and higher one coastal dyke										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke type		Character			HTTP, HTTPS	When there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Grade		Integer			HTTP, HTTPS	When there is a change	API		
		Protection area		Decimal	Km2		HTTP, HTTPS	When there is a change	API		
		Protection population		Integer	Person		HTTP, HTTPS	When there is a change	API		
		Beginning		Character			HTTP,	When there is a	API		

		place name (Commune, district, province)					HTTPS	change			
		Ending place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
2	<i>Lower 3- level coastal dyke</i>										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke type		Character			HTTP, HTTPS	When there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Grade		Integer			HTTP, HTTPS	When there is a change	API		
		Protection area		Decimal	Km2		HTTP, HTTPS	When there is a change	API		
		Protection population		Integer	Person		HTTP, HTTPS	When there is a change	API		
		Beginning place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Ending place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
3	<i>3- level and higher one river dyke</i>										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke type		Character			HTTP, HTTPS	When there is a change	API		The type of dyke can be selected from many types including: - The dyke above level 3 lacks elevation compared to the design water level - A dyke above level 3 has a small surface - A dyke above level 3

											has a hardened surface (concrete or paved), the surface is graded - A dyke above level 3 is extruded, smuggled, leaking, and landslides have not been treated. - A dyke above level 3 has many termite nests that need to be monitored and handled - The dyke above grade 3 has reinforced corridor on the river side and foot of the dyke - A dyke above level 3 has planted breakwater bamboo - Section of dyke on level 3 combined with traffic road
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Grade		Integer			HTTP, HTTPS	When there is a change	API		
		Protection area		Decimal	Km2		HTTP, HTTPS	When there is a change	API		
		Protection population		Integer	Person		HTTP, HTTPS	When there is a change	API		
		Beginning place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Ending place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Dyke crest elevation		Decimal	m		HTTP, HTTPS	When there is a change	API		
		Design water level		Decimal	m		HTTP, HTTPS	When there is a change	API		
		The lack of elevation		Decimal	m		HTTP, HTTPS	When there is a change	API		For the dyke, there is a lack of elevation compared to the

											design water level
		The width of the dyke surface		Decimal	m		HTTP, HTTPS	When there is a change	API		
		Design width		Decimal	m		HTTP, HTTPS	When there is a change	API		For a dyke with small surface
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Width hardened or reinforced		Decimal	m		HTTP, HTTPS	When there is a change	API		For dykes with hardened surfaces (concrete or paved), the surface is graded
		Occurrence of effervescent extrusion, smuggling, leakage, landslide		Character			HTTP, HTTPS	When there is a change	API		The untreated leaks, leaks, and landslides should be monitored for dykes that are extruded, leaked, leaked or untreated
		Classification of effervescent extrusion, smuggling, leakage, landslide		Character			HTTP, HTTPS	When there is a change	API		The untreated leaks, leaks, and landslides should be monitored for dykes that are extruded, leaked, leaked or untreated
		Size and extent of effervescent extrusion, smuggling, leakage, and erosion		Character			HTTP, HTTPS	When there is a change	API		The untreated leaks, leaks, and landslides should be monitored for dykes that are extruded, leaked, leaked or untreated
		The water level started to happen, sparkling extrusion, smuggling, leakage, landslide		Decimal	m		HTTP, HTTPS	When there is a change	API		The untreated leaks, leaks, and landslides should be monitored for dykes that are extruded, leaked, leaked or untreated
		Termite condition and treatment method		Character			HTTP, HTTPS	When there is a change	API		For the dyke section with many termite nests, it is necessary to monitor and handle
		Width of dyke foot corridor on the copper side		Decimal	m		HTTP, HTTPS	When there is a change	API		For the dyke section with the dyke foot corridor on the copper side, the river side is reinforced
		The structure of the corridor		Character			HTTP, HTTPS	When there is a change	API		For the dyke section with the dyke foot

		at the foot of the dyke on the copper side									corridor on the copper side, the river side is reinforced
		Current situation of planting breakwater bamboo		Character			HTTP, HTTPS	When there is a change	API		For the dyke section, breakwater bamboo was planted
		Traffic combination part (face, dyke engine)		Character			HTTP, HTTPS	When there is a change	API		For the dyke section combining roads
		Location by location (traffic mix)		Character			HTTP, HTTPS	When there is a change	API		For the dyke section combining roads
		Allowable load of vehicles on the dyke		Decimal	Ton		HTTP, HTTPS	When there is a change	API		For the dyke section combining roads
		Roof coefficient on the river side, on the copper side		Decimal			HTTP, HTTPS	When there is a change	API		For the dyke section combining roads
4	Lower 3- level river dyke										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke type		Character			HTTP, HTTPS	When there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Grade		Integer			HTTP, HTTPS	When there is a change	API		
		Protection area		Decimal	Km2		HTTP, HTTPS	When there is a change	API		
		Protection population		Integer	Person		HTTP, HTTPS	When there is a change	API		
		Beginning place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Ending place name (Commune,		Character			HTTP, HTTPS	When there is a change	API		

		district, province)									
5	<i>Crop protection dyke</i>										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke type		Character			HTTP, HTTPS	When there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Grade		Integer			HTTP, HTTPS	When there is a change	API		
		Protection area		Decimal	Km2		HTTP, HTTPS	When there is a change	API		
		Protection population		Integer	Person		HTTP, HTTPS	When there is a change	API		
		Beginning place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Ending place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Name of main dyke		Character			HTTP, HTTPS	When there is a change	API		
		Km begin (Main dyke)		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end (Main dyke)		Decimal			HTTP, HTTPS	When there is a change	API		
6	<i>Dyke protection house</i>										
		Name		Character			HTTP, HTTPS	When there is a change	API		
		Position		Character			HTTP, HTTPS	When there is a change	API		
		Main dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Building year		Integer			HTTP, HTTPS	When there is a change	API		
		Upgrading year		Integer			HTTP, HTTPS	When there is a change	API		
		Current condition		Character			HTTP, HTTPS	When there is a change	API		
		Place name		Character			HTTP,	When there is a	API		

		(Commune, district, province)					HTTPS	change			
		Management unit		Character			HTTP, HTTPS	When there is a change	API		
7	Roof embankment (river dyke)										
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Length		Decimal	Km		HTTP, HTTPS	When there is a change	API		
		Width		Decimal	m		HTTP, HTTPS	When there is a change	API		
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Construction grade		Integer			HTTP, HTTPS	When there is a change	API		
		Building year		Integer			HTTP, HTTPS	When there is a change	API		
		Current condition		Character			HTTP, HTTPS	When there is a change	API		
		Management unit		Character			HTTP, HTTPS	When there is a change	API		
		Beginning place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Ending place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Dyke profile		Character			HTTP, HTTPS	When there is a change	API		
8	Store										
		Name		Character			HTTP, HTTPS	When there is a change	API		
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Position		Character			HTTP, HTTPS	When there is a change	API		
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Building year		Integer			HTTP, HTTPS	When there is a change	API		
		Upgrading		Integer			HTTP,	When there is a	API		

		year					HTTPS	change			
		Current condition		Character			HTTP, HTTPS	When there is a change	API		
		Management unit		Character			HTTP, HTTPS	When there is a change	API		
		Materials		Character			HTTP, HTTPS	When there is a change or 1 year/ a time	API		When there is a change or 1 year/ a time
		Size		Character			HTTP, HTTPS	When there is a change	API		
		Place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
9	Head office of the Commanding Committee of Flood and Storm Control										
		Name		Character			HTTP, HTTPS	When there is a change	API		
		Office type		Character			HTTP, HTTPS	When there is a change	API		
		Address		Character			HTTP, HTTPS	When there is a change	API		
		Position		Character			HTTP, HTTPS	When there is a change	API		
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Telephone		Character			HTTP, HTTPS	When there is a change	API		
		Fax		Character			HTTP, HTTPS	When there is a change	API		
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Building year		Integer			HTTP, HTTPS	When there is a change	API		
		Upgrading year		Integer			HTTP, HTTPS	When there is a change	API		
		Current condition		Character			HTTP, HTTPS	When there is a change	API		
10	Key dyke										
		Dyke name		Character			HTTP, HTTPS	Annually or when there is a change	API		
		Km begin		Decimal			HTTP, HTTPS	When there is a change	API		
		Km end		Decimal			HTTP, HTTPS	When there is a change	API		
		Dyke system		Character			HTTP, HTTPS	Annually or when there is a change	API		
		Place name (Commune,		Character			HTTP, HTTPS	Annually or when there is a change	API		

		district, province)									
		Information		Character			HTTP, HTTPS	Annually or when there is a change	API		
		Type of key dyke		Character			HTTP, HTTPS	Annually or when there is a change	API		
		Key dyke grade		Decimal			HTTP, HTTPS	Annually or when there is a change	API		
II	Sluice										
		Sluice name		Character			HTTP, HTTPS	When there is a change	API		
		Position		Character			HTTP, HTTPS	When there is a change	API		
		Structure		Character			HTTP, HTTPS	When there is a change	API		
		Building year		Integer			HTTP, HTTPS	When there is a change	API		
		Upgrading year		Integer			HTTP, HTTPS	When there is a change	API		
		Current condition		Character			HTTP, HTTPS	When there is a change	API		
		Place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Dyke system		Character			HTTP, HTTPS	When there is a change	API		
IV	Surveillance cameras for reservoirs, dykes and disaster prevention works										
		Camera name		Character			HTTP, HTTPS	When there is a change	API		
		Place name (Commune, district, province)		Character			HTTP, HTTPS	When there is a change	API		
		Dyke name		Character			HTTP, HTTPS	When there is a change	API		
		Longitude		Decimal			HTTP, HTTPS	When there is a change	API		
		Latitude		Decimal			HTTP, HTTPS	When there is a change	API		
		Code (Serial)		Integer			HTTP, HTTPS	When there is a change	API		
		IP/ Domain		Character			HTTP, HTTPS	When there is a change	API		
		Username		Character			HTTP, HTTPS	When there is a change	API		
		Password		Character			HTTP,	When there is a	API		

							HTTPS	change			
		Operation condition		Integer			HTTP, HTTPS	When there is a change	API		
		Contact point of dyke section		Character			HTTP, HTTPS	When there is a change	API		
		Contact point of dyke department		Character			HTTP, HTTPS	When there is a change	API		
		Picture		Image		JPEG storage format - Full DH resolution 1920 * 1280 (or higher)	RTSP	Real time or 25 shots / sec	- Stream video over the Internet using the ONVIF standard		- IP camera supports ONVIF standard Configuration allows viewing stream via RTSP protocol, security through username and password Configure domain name or static IP - Open the port on Router / Modem corresponding to the number of cameras to share (for connection to RTSP protocol)
		Video		Video		JPEG storage format - Full hd resolution 1920 * 1280 (or higher)	RTSP	Real time or 25 shots / sec	- Stream video over the Internet using the onvif standard		- IP camera supports ONVIF standard Configuration allows viewing stream via RTSP protocol, security through username and password Configure domain name or static IP - Open the port on Router / Modem corresponding to the number of cameras to share (for connection to RTSP protocol)
III	Aquaculture data								x		
I	Boating anchor										
		Name of anchor		Character		CSV		When there is a change	FTP or sending file		
		Province		Character		CSV		When there is a change	FTP or sending file		
		Address		Character		CSV		When there is a change	FTP or sending file		
		Telephone		Character		CSV		When there is a change	FTP or sending file		

		Frequency		Decimal	Mhz	CSV		When there is a change	FTP or sending file		
		Capacity		Integer	Item	CSV		When there is a change	FTP or sending file		
		The largest vessel can enter the anchorage		Integer	CV	CSV		When there is a change	FTP or sending file		
		Number of ships anchored		Integer	item	CSV		When there is a change	FTP or sending file		
2	<i>Ship supervision</i>										
		Name of ship		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Ship's number plate		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Longitude		Decimal		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Latitude		Decimal		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Time of recording		Date		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Ship owner		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Ship owner's phone number		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Ship owner's address		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Captain		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Phone number - captain		Character		CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Length		Decimal	m	CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
		Wattage		Decimal	CV	CSV	FTP or HTTP, HTTPS	1h/a time	FTP server or RESTful API		
VIII	Economic and population information and data										Kết nối với phần mềm DSKT

	serving natural disaster prevention and control										
	Population										
		Total population		Integer	Person		HTTP, HTTPS	1 year/a time	RESTful API		
		Total household		Integer	Person		HTTP, HTTPS	1 year/a time	RESTful API		
		Vulnerable persons		Integer	Person		HTTP, HTTPS	1 year/a time	RESTful API		
	Landuse							1 year/a time			
		Natural land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Land for agriculture production		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Other agricultural land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Forestry land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Aquaculture land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Land for salt production		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Non-agricultural land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
		Unused land		Decimal	ha		HTTP, HTTPS	1 year/a time	RESTful API		
	Production and business										
		Crop		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Poultry		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Sea food		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Match production		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Forestry		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Industry		Integer	Employee		HTTP, HTTPS	1 year/a time	RESTful API		
		Travel		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
	Infrastructure										
		House		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
		School		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		

		Health care		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
		Culture		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
		CPP office		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
		Market, commercial center		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
		The location can evacuate people		Integer	Item		HTTP, HTTPS	1 year/a time	RESTful API		
	Clean water works										
		Households that use well water		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Households that use tap water		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
		Households that use water tanks, centralized water supply stations		Integer	Household		HTTP, HTTPS	1 year/a time	RESTful API		
IX	Information and data on natural disaster prevention projects, civil works combined with natural disaster prevention and control.										
I	Multi-disaster warning station										
		Station		Character		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
		District		Character		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
		Province/city		Character		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
		Place		Character		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
		Station type		Integer		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
		Longitude		Decimal		Shape file (.SHP)	FTP	Updating annually or when there is a	FTP server		Technical specifications/ Static

								change			data
		Latitude		Decimal		Shape file (.SHP)	FTP	Updating annually or when there is a change	FTP server		Technical specifications/ Static data
2	<i>River bank erosion prevention works</i>										
		Construction name		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Province		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		District		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Commune		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		River/coastal name		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Length (m)		Decimal			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Structure		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Building year		Integer			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Complete year		Integer			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Condition		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
3	<i>Coastal bank erosion prevention works</i>										
		Construction name		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Province		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		District		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Commune		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		River/coastal		Character			HTTP,	When there is a	API		Technical

		name					HTTPS	change			specifications/ Static data
		Length (m)		Decimal			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Structure		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Building year		Integer			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Complete year		Integer			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
		Condition		Character			HTTP, HTTPS	When there is a change	API		Technical specifications/ Static data
4	Material for disaster management and control										
		Name		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Province		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		District		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Commune		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Place		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Longitude		Decimal		Shape file (.SHP)	FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Latitude		Decimal		Shape file (.SHP)	FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Structure		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Building year		Integer			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Upgrading year		Integer			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Condition		Character			FTP or	1 year/ a time or	FTP server or		

							HTTP, HTTPS	when there is a change	RESTful API		
		Management unit		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
		Document		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		When there is a change or 1 year/ a time
		Size		Character			FTP or HTTP, HTTPS	1 year/ a time or when there is a change	FTP server or RESTful API		
V	Disaster risk map										
		Flood map caused by super storm					- Esri shapefile data file format. Service format: WMS, WFS - Coordinate system: VN2000 and WGS84-4326		- FTP server - Mail	- Edited map file saves data in the specified format and coordinate system - PDF version - Data layers for mapping: economic population, population, natural disaster prevention works. - For running flooding models: provide simulated flooding video (Mp4 format), time between scenarios is 30 minutes	
		Map of storm surge					- Esri shapefile data file format. Service format: WMS, WFS - Coordinate system: VN2000 and WGS84-4326		- FTP server - Mail	- Edited map file saves data in the specified format and coordinate system - PDF version - Data layers for mapping: economic population, population, natural disaster prevention works. - For running flooding models: provide simulated flooding video (Mp4 format), time between scenarios is 30 minutes	
		Multi-disaster risk map					- Esri shapefile data file format. Service format: WMS, WFS - Coordinate system: VN2000 and WGS84-4326		- FTP server - Mail	- Edited map file saves data in the specified format and coordinate system - PDF version - Data layers for mapping: economic population, population, natural disaster prevention works. - For running flooding models: provide simulated flooding video (Mp4 format), time between scenarios is 30 minutes	
		Landslide map					- Esri shapefile data file format. Service format: WMS, WFS - Coordinate		- FTP server - Mail	- Edited map file saves data in the specified format and coordinate system - PDF version - Data layers for mapping: economic population, population, natural disaster prevention works.	

						system: VN2000 and WGS84- 4326				- For running flooding models: provide simulated flooding video (Mp4 format), time between scenarios is 30 minutes	
		Thematic map of natural disaster prevention				- Esri shapefile data file format. Service format: WMS, WFS - Coordinate system: VN2000 and WGS84- 4326			- FTP server - Mail	- Edited map file saves data in the specified format and coordinate system - PDF version - Data layers for mapping: economic population, population, natural disaster prevention works. - For running flooding models: provide simulated flooding video (Mp4 format), time between scenarios is 30 minutes	
	Remote sensing information and data in service of natural disaster prevention and control										
		Satellite image		JPEG, PNG, TIFF		JPEG, PNG, TIFF	FTP	According to the request of the General Department of Information and Control and the actual situation	FTP server	Original image file (TIFF) and preview file (JPG / PNG)	
		Photo from flycam, UAV		JPEG		JPEG	FTP	According to the request of the General Department of Information and Control and the actual situation	FTP server	Original image file (TIFF) and preview file (JPG / PNG)	
		Video from Drones, UAV		MPEG4		MPEG4	FTP	According to the request of the General Department of Information and Control and the actual situation	FTP server	Original image file (TIFF) and preview file (JPG / PNG)	

SECTION 6: RETURNABLE BIDDING FORMS / CHECKLIST

This form serves as a checklist for preparation of your Bid. Please complete the Returnable Bidding Forms in accordance with the instructions in the forms and return them as part of your Bid submission. No alteration to format of forms shall be permitted and no substitution shall be accepted.

Before submitting your Bid, please ensure compliance with the Bid Submission instructions of the BDS 22.

Technical Bid:

Have you duly completed all the Returnable Bidding Forms?	
▪ Form A: Bid Submission Form	<input type="checkbox"/>
▪ Form B: Bidder Information Form	<input type="checkbox"/>
▪ Form C: Joint Venture/Consortium/ Association Information Form	<input type="checkbox"/>
▪ Form D: Qualification Form	<input type="checkbox"/>
▪ Form E: Format of Technical Bid	<input type="checkbox"/>
▪ <u>List of all offered equipments with detail specifications and warranty period without price</u>	
▪ <u>All required documents indicated in section IX. evaluation criteria of the TOR</u>	
	<input type="checkbox"/>

Price Schedule:

▪ Form F: Price Schedule Form signed and stamped in PDF	<input type="checkbox"/>
▪ Form F: Price Schedule for in excel sheet	

Form A: Bid Submission Form

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	[Insert ITB Reference Number]		

We, the undersigned, offer to supply the goods and related services required for [Insert Title of goods and services] in accordance with your Invitation to Bid No. [Insert ITB Reference Number] and our Bid. We hereby submit our Bid, which includes this Technical Bid and Price Schedule.

Our attached Price Schedule is for the sum of [Insert amount in words and figures and indicate currency].

We hereby declare that our firm, its affiliates or subsidiaries or employees, including any JV/Consortium /Association members or subcontractors or suppliers for any part of the contract:

- a) is not under procurement prohibition by the United Nations, including but not limited to prohibitions derived from the Compendium of United Nations Security Council Sanctions Lists;
- b) have not been suspended, debarred, sanctioned or otherwise identified as ineligible by any UN Organization or the World Bank Group or any other international Organization;
- c) have no conflict of interest in accordance with Instruction to Bidders Clause 4;
- d) do not employ, or anticipate employing, any person(s) who is, or has been a UN staff member within the last year, if said UN staff member has or had prior professional dealings with our firm in his/her capacity as UN staff member within the last three years of service with the UN (in accordance with UN post-employment restrictions published in ST/SGB/2006/15);
- e) have not declared bankruptcy, are not involved in bankruptcy or receivership proceedings, and there is no judgment or pending legal action against them that could impair their operations in the foreseeable future;
- f) undertake not to engage in proscribed practices, including but not limited to corruption, fraud, coercion, collusion, obstruction, or any other unethical practice, with the UN or any other party, and to conduct business in a manner that averts any financial, operational, reputational or other undue risk to the UN and we embrace the principles of the United Nations Supplier Code of Conduct and adhere to the principles of the United Nations Global Compact.

We declare that all the information and statements made in this Bid are true and we accept that any misinterpretation or misrepresentation contained in this Bid may lead to our disqualification and/or sanctioning by the UNDP.

We offer to supply the goods and related services in conformity with the Bidding documents, including the UNDP General Conditions of Contract and in accordance with the Schedule of Requirements and Technical Specifications.

Our Bid shall be valid and remain binding upon us for the period specified in the Bid Data Sheet.

We understand and recognize that you are not bound to accept any Bid you receive.

I, the undersigned, certify that I am duly authorized by [Insert Name of Bidder] to sign this Bid and bind it should UNDP accept this Bid.

Name: _____

Title: _____

Date: _____

Signature: _____

[Stamp with official stamp of the Bidder]

Form B: Bidder Information Form

Legal name of Bidder	[Complete]
Legal address	[Complete]
Year of registration	[Complete]
Bidder's Authorized Representative Information	Name and Title: [Complete] Telephone numbers: [Complete] Email: [Complete]
Are you a UNGM registered vendor?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, [insert UGNM vendor number]
Are you a UNDP vendor?	<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, [insert UNDP vendor number]
Countries of operation	[Complete]
No. of full-time employees	[Complete]
Quality Assurance Certification (e.g. ISO 9000 or Equivalent) <i>(If yes, provide a Copy of the valid Certificate):</i>	[Complete]
Does your Company hold any accreditation such as ISO 14001 or ISO 14064 or equivalent related to the environment? <i>(If yes, provide a Copy of the valid Certificate):</i>	[Complete]
Does your Company have a written Statement of its Environmental Policy? <i>(If yes, provide a Copy)</i>	[Complete]
Does your organization demonstrates significant commitment to sustainability through some other means, for example internal company policy documents on women empowerment, renewable energies or membership of trade institutions promoting such issues	[Complete]
Is your company a member of the UN Global Compact	[Complete]
Contact person that UNDP may	Name and Title: [Complete]

contact for requests for clarifications during Bid evaluation	Telephone numbers: [Complete] Email: [Complete]
Please attach the following documents:	<ul style="list-style-type: none"> ▪ Company Profile, which should <u>not</u> exceed fifteen (15) pages, including printed brochures and product catalogues relevant to the goods and/or services being procured ▪ Certificate of Incorporation/ Business Registration ▪ Tax Registration/Payment Certificate issued by the Internal Revenue Authority evidencing that the Bidder is updated with its tax payment obligations, or Certificate of Tax exemption, if any such privilege is enjoyed by the Bidder ▪ Trade name registration papers, if applicable ▪ Quality Certificate (e.g., ISO, etc.) and/or other similar certificates, accreditations, awards and citations received by the Bidder, if any ▪ Environmental Compliance Certificates, Accreditations, Markings/Labels, and other evidences of the Bidder's practices which contributes to the ecological sustainability and reduction of adverse environmental impact (e.g., use of non-toxic substances, recycled raw materials, energy-efficient equipment, reduced carbon emission, etc.), either in its business practices or in the goods it manufactures ▪ Patent Registration Certificates, if any of technologies submitted in the Bid is patented by the Bidder ▪ Certification or authorization to act as Agent on behalf of the Manufacturer, or Power of Attorney. ▪ Export Licenses, if applicable ▪ Local Government permit to locate and operate in assignment location, if applicable ▪ Official Letter of Appointment as local representative, if Bidder is submitting a Bid on behalf of an entity located outside the country

Form C: Joint Venture/Consortium/Association Information Form

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	[Insert ITB Reference Number]		

To be completed and returned with your Bid if the Bid is submitted as a Joint Venture/Consortium/Association.

No	Name of Partner and contact information <i>(address, telephone numbers, fax numbers, e-mail address)</i>	Proposed proportion of responsibilities (in %) and type of goods and/or services to be performed
1	[Complete]	[Complete]
2	[Complete]	[Complete]
3	[Complete]	[Complete]

Name of leading partner (with authority to bind the JV, Consortium, Association during the ITB process and, in the event a Contract is awarded, during contract execution)	[Complete]
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We have attached a copy of the below referenced document signed by every partner, which details the likely legal structure of and the confirmation of joint and severable liability of the members of the said joint venture:

☐ Letter of intent to form a joint venture **OR** ☐ JV/Consortium/Association agreement

We hereby confirm that if the contract is awarded, all parties of the Joint Venture/Consortium/Association shall be jointly and severally liable to UNDP for the fulfillment of the provisions of the Contract.

Name of partner: _____ Name of partner: _____

Signature: _____ Signature: _____

Date: _____ Date: _____

Name of partner: _____ Name of partner: _____

Signature: _____ Signature: _____

Date: _____ Date: _____

Form D: Eligibility and Qualification Form

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	[Insert ITB Reference Number]		

If JV/Consortium/Association, to be completed by each partner.

History of Non- Performing Contracts

<input type="checkbox"/> Non-performing contracts did not occur during the last 3 years			
<input type="checkbox"/> Contract(s) not performed in the last 3 years			
Year	Non- performed portion of contract	Contract Identification	Total Contract Amount (current value in US\$)
		Name of Client: Address of Client: Reason(s) for non-performance:	

Litigation History (including pending litigation)

<input type="checkbox"/> No litigation history for the last 3 years			
<input type="checkbox"/> Litigation History as indicated below			
Year of dispute	Amount in dispute (in US\$)	Contract Identification	Total Contract Amount (current value in US\$)
		Name of Client: Address of Client: Matter in dispute: Party who initiated the dispute: Status of dispute: Party awarded if resolved:	

Previous Relevant Experience

Please list only previous similar assignments successfully completed in the last 5 years.

List only those assignments for which the Bidder was legally contracted or sub-contracted by the Client as a company or was one of the Consortium/JV partners. Assignments completed by the Bidder's individual experts working privately or through other firms cannot be claimed as the relevant experience of the Bidder, or that of the Bidder's partners or sub-consultants, but can be claimed by the Experts themselves in their CVs. The Bidder should be prepared to substantiate the claimed experience by presenting copies of relevant documents and references if so requested by UNDP.

Project name & Country of Assignment	Client & Reference Contact Details	Contract Value	Period of activity and status	Types of activities undertaken

Bidders may also attach their own Project Data Sheets with more details for assignments above.

Financial Standing

Annual Turnover for the last 3 years (Mandatory)	Year	USD
	Year	USD
	Year	USD
Latest Credit Rating (if any), indicate the source		

Financial information (in US\$ equivalent)	Historic information for the last 3 years		
	Year 1	Year 2	Year 3
	<i>Information from Balance Sheet</i>		
Total Assets (TA)			
Total Liabilities (TL)			
Current Assets (CA)			
Current Liabilities (CL)			
	<i>Information from Income Statement</i>		
Total / Gross Revenue (TR)			
Profits Before Taxes (PBT)			
Net Profit			
Current Ratio			

☐ Attached are copies of the audited financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following condition:

- Must reflect the financial situation of the Bidder or party to a JV, and not sister or parent companies;
- Historic financial statements must be audited by a certified public accountant;
- Historic financial statements must correspond to accounting periods already completed and audited. No statements for partial periods shall be accepted.

Form E: Format of Technical Bid

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	[Insert ITB Reference Number]		

The Bidder's Bid should be organized to follow this format of the Technical Bid. Where the bidder is presented with a requirement or asked to use a specific approach, the bidder must not only state its acceptance, but also describe how it intends to comply with the requirements. Where a descriptive response is requested, failure to provide the same will be viewed as non-responsive.

SECTION 1: Bidder's qualification, capacity and expertise

- 1.1 General organizational capability which is likely to affect implementation: management structure, financial stability and project financing capacity, project management controls, extent to which any work would be subcontracted (if so, provide details).
- 1.2 Relevance of specialized knowledge and experience on similar engagements/contracts
- 1.3 Quality assurance procedures and risk mitigation measures.

SECTION 2: Scope of Supply, Technical Specifications, and Related Services

This section should demonstrate the Bidder's responsiveness to the specification by identifying the specific components proposed, addressing the requirements, as specified, point by point; providing a detailed description of the essential performance characteristics proposed; and demonstrating how the proposed bid meets or exceeds the requirements/specifications. All important aspects should be addressed in sufficient detail.

- 2.1 Provide list of required goods with detailed specifications, warranty and Quantity without price
- 2.2 A detailed description of how the Bidder will deliver the required goods and services, keeping in mind the appropriateness to local conditions and project environment. Details how the different service elements shall be organized, controlled and delivered.
- 2.3 Explain whether any work would be subcontracted, to whom, how much percentage of the requirements, the rationale for such, and the roles of the proposed sub-contractors and how everyone will function as a team.
- 2.4 Explaining bidders' understanding the tasks and expected deliverables/outcomes of the TOR;
- 2.5 Providing methodology and approach to address the needs/demands of the TOR
- 2.6 Implementation plan including a Gantt Chart or Project Schedule indicating the detailed sequence of activities that will be undertaken and their corresponding timing.
- 2.7 Providing response to the requirements in the below table:

Goods to be Supplied and Technical Specifications	Compliance with technical specifications in the TOR
---	---

	Yes, we comply	No, we cannot comply (indicate discrepancies)
HARDWARE		
Device for measuring wind		
Device for measuring air temperature		
Device for measuring rainfall		
IP camera		
Video recorder device		
Electronic board		
MATERIALS		
Concrete/steel pole (sturdy, resistant to all wind levels; height from 10m to 12m)		
Fiber-optic cable (2 FO, 2 cores)		
Electricity line (Wrapping wire: PVC; Nominal voltage: 0.6/1kV; Cover depth: 0.8/0.8mm; Core material: Cu 100%)		

Other Related services and requirements (based on the information provided in Section 5)	Compliance with requirements		Details or comments on the related requirements
	Yes, we comply	No, we cannot comply (indicate discrepancies)	
Software development			
Setting up system			
Services and maintenance			
Investigation			
Implementation			
Training			
Warranty: 2 years			
Local Service Support			

SECTION 3: Management Structure and Key Personnel

- 3.1 Describe the overall management approach toward planning and implementing the project. Include an organization chart for the management of the project describing the relationship of key positions and designations. Provide a spreadsheet to show the activities of each personnel and the time allocated for his/her involvement.
- 3.2 Provide CVs for key personnel that will be provided to support the implementation of this project using the format below. CVs should demonstrate qualifications in areas relevant to the scope of goods and/or services.

(see required documents in form 3: team composition under section IX. Evaluation Criteria of the TOR)

Format for CV of Proposed Key Personnel

Name of Personnel	[Insert]
Position for this assignment	[Insert]
Nationality	[Insert]
Language proficiency	[Insert]
Education/ Qualifications	<i>[Summarize college/university and other specialized education of personnel member, giving names of schools, dates attended, and degrees/qualifications obtained.]</i> [Insert]
Professional certifications	<i>[Provide details of professional certifications relevant to the scope of goods and/or services]</i> <ul style="list-style-type: none">▪ Name of institution: [Insert]▪ Date of certification: [Insert]
Employment Record/ Experience	<i>[List all positions held by personnel (starting with present position, list in reverse order), giving dates, names of employing organization, title of position held and location of employment. For experience in last five years, detail the type of activities performed, degree of responsibilities, location of assignments and any other information or professional experience considered pertinent for this assignment.]</i> [Insert]
References	<i>[Provide names, addresses, phone and email contact information for two (2) references]</i> Reference 1: [Insert] Reference 2: [Insert]

I, the undersigned, certify that to the best of my knowledge and belief, the data provided above correctly describes my qualifications, my experiences, and other relevant information about myself.

Signature of Personnel

Date (Day/Month/Year)

FORM F: Price Schedule Form

Name of Bidder:	[Insert Name of Bidder]	Date:	Select date
ITB reference:	[Insert ITB Reference Number]		

The Bidder is required to prepare the Price Schedule following the below format. The Price Schedule must include a detailed cost breakdown of all goods and related services to be provided. Separate figures must be provided for each functional grouping or category, if any.

Any estimates for cost-reimbursable items, such as travel of experts and out-of-pocket expenses, should be listed separately.

Currency of the Bid: USD

Price Schedule

Item #	Description	UOM	Quantity	Unit Price	Total Price
I	Travelling expenses for investigation; implementation; training, acceptance and transfer				
	<i>Investigation</i>				
	Travel				
	Per-diem				
	<i>Implementation</i>				
	Travel				
	Per-diem				
	<i>Training, acceptance and transfer</i>				
	Travel				
	Per-diem				
II	Equipment and material expenses				
	<i>Equipment</i>				
	Device for measuring wind	Item	24		

	Device for measuring air temperature	Item	24		
	Device for measuring rainfall	Item	24		
	IP camera	Item	24		
	Video recorder device	Item	01		
	Electronic board	Item	46		
	Others (if required) please specify.....	Item			
	<i>Materials</i>				
	Concrete/steel pole (sturdy, resistant to all wind levels; height from 10m to 12m)	Item	24		
	Fiber-optic cable (2 FO, 2 cores)	m	2,400		
	Electricity line (Wrapping wire: PVC; Nominal voltage: 0.6/1kV; Cover depth: 0.8/0.8mm; Core material: Cu 100%)	m	2,400		
	Others (if required) please specify.....				
III	Expenses for software development				
				
				
IV	Expenses for setting up system				
				
V	Expenses for services and maintenance				
				

VI	Expenses of acceptance and transfer meetings				
				
VII	Other expenses (please list out)				
				
	VAT				
GRAND TOTAL					

Name of Bidder: _____

Authorised signature and stamp: _____

Name of authorised signatory: _____

Functional Title: _____